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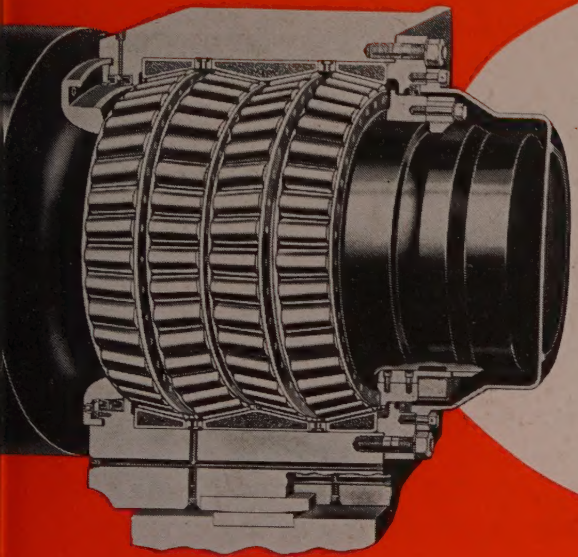
Illinois U Library

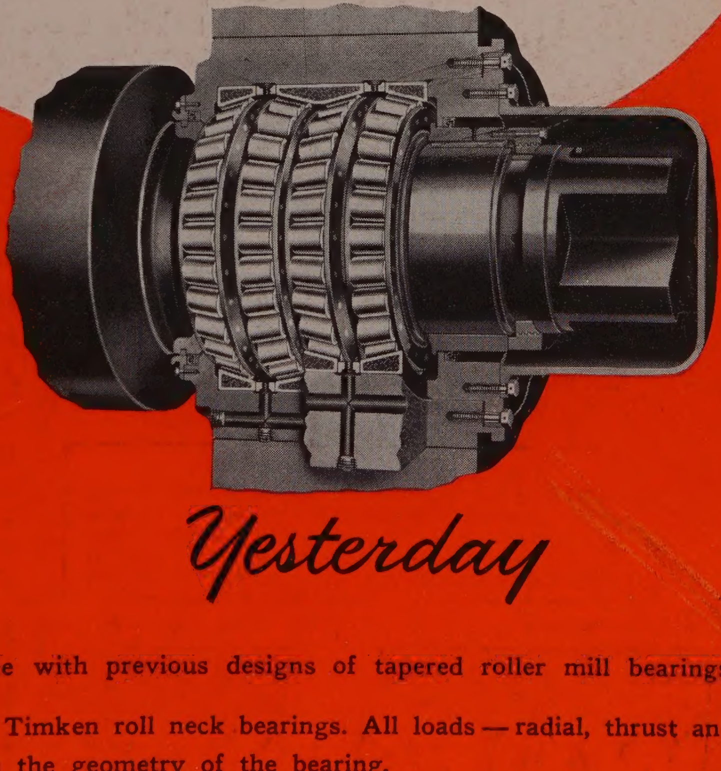
The IRON AGE

NOVEMBER 25, 1948

HIGHER ROLLING MILL SPEEDS WITH GREATER MILL RIGIDITY



Today



Yesterday

s rolling speeds and loads go higher and igher, the necessity for increased mill rigidity ecomes greater and greater.

imken Balanced Proportion rolling mill bearngs are definite factors of high speed mill peration because they eliminate roll neck iction. They make possible more rigid mills ecause balanced proportion design permits rger diameter roll necks than were possible with previous designs of tapered roller mill bearings.

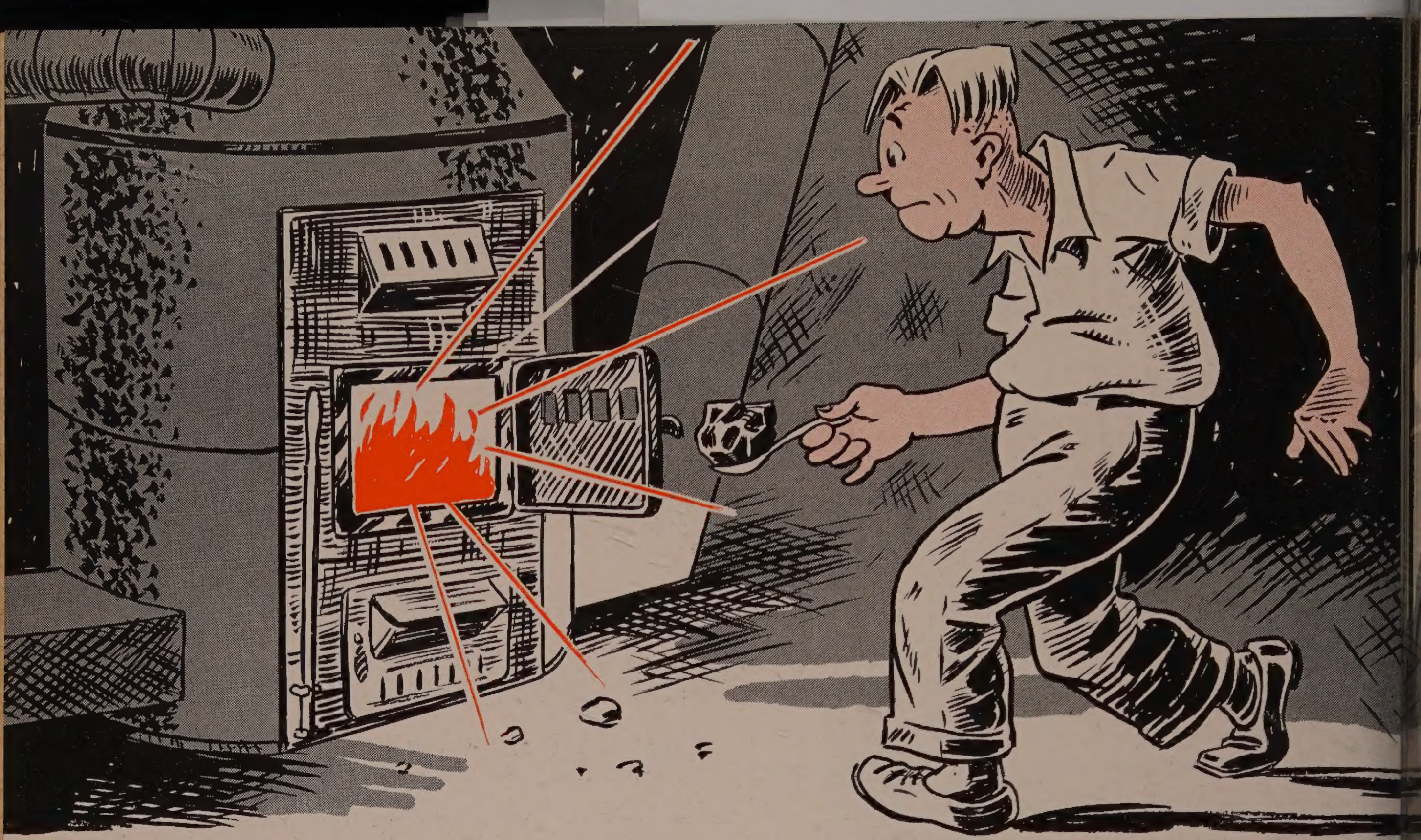
o separate thrust members are required with Timken roll neck bearings. All loads — radial, thrust and oth combined — are efficiently handled within the geometry of the bearing.

o complicated lubricating systems are needed with Timken roll neck bearings. Roll changing is mplified. Maintenance is reduced.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
ROLL NECK BEARINGS

Past performance proves that the tonnage life expectancy of Timken roll neck bearings is greater than that of any other bearings used on mill roll necks. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address "TIMROSCO".

T JUST A BALL ○ NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION



It's like feeding the furnace with a teaspoon

. . . WHEN you handle materials with a slow, undersize crane. Your crane equipment must be properly adapted to its job if you are to get efficiency and economy.

Too light a crane means expensive maintenance and short life . . . oversize motors and overweight construction mean excessive depreciation and power costs.

Let experienced Whiting crane engineers adapt your materials-handling equipment to your current needs. They are experts in analyzing — then designing and building (or adapting) cranes to meet individual plant requirements. Ask for their recommendations.

IMPORTANT

Whiting has acquired the patents, manufacturing, and sales rights to Spencer & Morris Tramrail Systems. These, combined with Whiting Hoists, Light Cranes, and Heavy Cranes, enable Whiting to supply a complete fully integrated overhead materials-handling system.

WHITING CORPORATION
15601 Lathrop Ave. Harvey, Illinois

Offices in Chicago, Cincinnati, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, and St. Louis. Agents in other principal cities. Canadian Subsidiary: Whiting Corporation (Canada) Ltd., Toronto, Ontario. Export Department: 30 Church St., New York 7, N. Y.

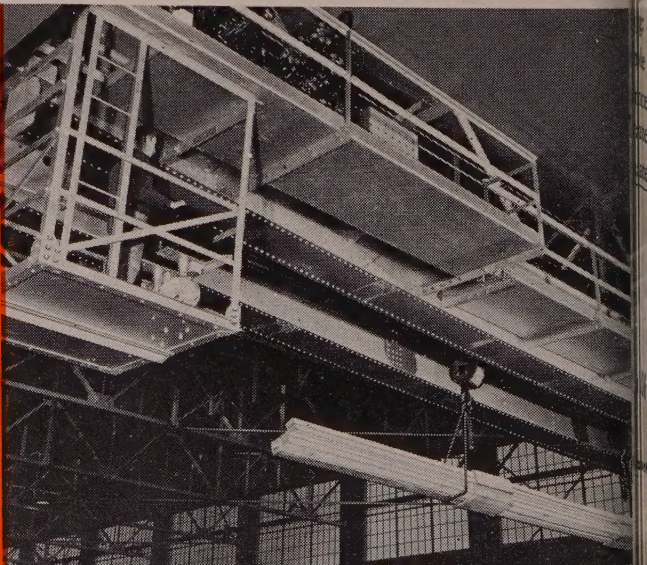
Dependable · · Quiet-Running · · Durable

WHITING

Overhead Traveling CRANES

BUILDERS OF QUALITY CRANES

FOR OVER 60 YEARS



With GULF Soluble Cutting Oil

'e increased plastic tool handle production over 100%"

←SAYS THIS FOREMAN

The Foreman of Forsberg Manufacturing Co., Bridgeport, Conn., (left) consults with a Gulf Lubrication Engineer on results with Gulf Soluble Cutting Oil in machining plastic tool handles.

Ve heard such fine reports on Gulf Soluble Cut-
ig Oil for metals that we decided to act on the
commendation of a Gulf Lubrication Engineer
d use it for machining plastic tool handles."
s this Foreman. "Results have been outstand-
: A big increase in production, since we were
le to speed up the machines; better finishes,
ce with Gulf Soluble Cutting Oil no hot
ter wash is required; and fire hazard elim-
ited."

GULF INDUSTRIAL LUBRICATION

lf Oil Corporation • Gulf Refining Company

Division Sales Offices:
New Orleans • Houston • Louisville • Toledo
ston • New York • Philadelphia • Pittsburgh • Atlanta

Gulf Soluble Cutting Oil meets today's demands for a cooling and lubricating fluid which will do a better job over a wide range of turning, milling, grinding, and many other machining operations.

For further information on Gulf Soluble Cutting Oil—and for one of Gulf's practical slide-rule-type calculators, which will help you maintain desired soluble oil concentrations—send the coupon below.

Gulf Oil Corporation · Gulf Refining Company IA
3800 Gulf Building, Pittsburgh 30, Pa.

Please send me, without obligation, the material I have indicated below:

☐ Further information on the new Gulf Soluble Cutting Oil.

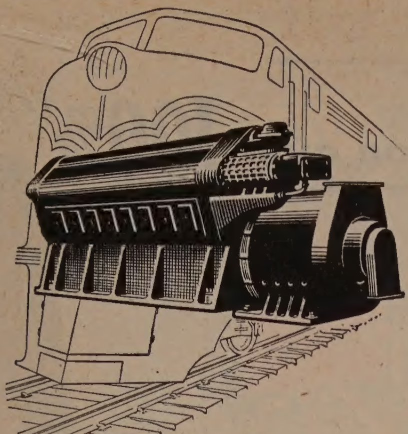
☐ Practical slide-rule-type calculator for help in maintaining desired soluble oil concentrations.

Name..

Company..

Title..

Address..



dieselization

Diesel engines in railroad locomotives are piling up an enviable trouble-free performance record. Many castings in these engines contain specified Molybdenum contents.

When wear or heat must be resisted, and high strengths are required, the use of Molybdenum in cast iron is becoming more and more routine.

The listing of a cylinder liner for Diesel use in railroad locomotives containing 3.20% Carbon, 1.90% Silicon, 0.85% Manganese, with 0.20% Chromium, 0.40% Molybdenum and 0.45% Nickel added can be found on page 10 of our new booklet—"Applications of Molybdenum Cast Irons."

Dozens of other alloy cast iron compositions used in Diesel engines, as well as hundreds of other Molybdenum-containing compositions are similarly listed in this new booklet. Write for it!

Climax Molybdenum Company
500 Fifth Avenue
New York City

Applications

Please send your FREE BOOKLET "Applications of Molybdenum Cast Irons"

Name..........

Company..........

MOLY

Address..........

IA-11 F9

Fatigue Cracks

BY C. T. POST

Loyal Reader Dept.

• • Your favorite family journal's book review editor, we regret to report, is narrow minded. He insists that the readers are interested only in non-fiction — nonfiction that tells how to do things better, helps men get ahead. He is missing a bet. We are reading a new novel, "Light in the Sky," by Agatha Young which definitely should be on the review list. To give you an idea, here's what the jacket says:

> *"Among Cleveland's roaring blast furnaces in the 1870's John Fenno — titan of industry — ruled his fledgling steel empire. At his side was the one person he loved: his daughter Willoughby — beautiful to behold, ruthless in her acquisition of power . . .*
>
> *"Agatha Young writes of the transition period from iron to steel, an era when Eastern giants like Jay Cooke came to grips with men such as John Fenno in the West. It was a time when ore ships plied the Lakes under sail, and the use of steam was just beginning. In contrast to the shocking poverty of the dock workers, the elegance of society unfolded . . ."*

The only sharp criticism we have to make is the apparent limited reading habits of the principal character. For instance:

> *Page 7 — "In the end, he picked up a copy of* IRON AGE *from his table . . ."*
>
> *Page 67 — " . . . which happened to be a copy of* IRON AGE *. . ."*
>
> *Page 71—". . . looking for the last number of* IRON AGE *. . ."*
>
> *Page 281—"took* IRON AGE *off the center table . . ."*
>
> *Page 281 — "smiled and returned to* IRON AGE *. . ."*

That, of course, gives you an idea of how titans of industry get ahead, which should meet the specifications of the book review editor. But somehow we are much more interested in daughter Willoughby. We can't wait to get to page 282. Maybe she, ruthless in her acquisition of power, will catch on and start reading your f.f.j., too.

Trots

• • To Reader Davenport of Cincinnati: So you want to know if, in view of events of Nov. 2 last, your f.f.j. editors can change the heading to "*Weakly* Gallup Polls"? You say, Gallup has been reduced to a trot. Well, the editors did better than that. They simply yelled, "Whoa," and turned the Polls out to pasture. A deviation of even 3.9 pct on predictions is way below the news department standard on a straight track. The smarter pollsters now are insisting on a steeplechase course, where hedges always give an excuse for a fall.

Make It Short

• • Whether or not the election had anything to do with it, it's heartening to note that at least one Government agency is making an attempt to reduce the number of words in its title. According to last week's issue, you can get a report on joining high-strength aluminum through the Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C. Before the Economy-on-Words-in-Titles Campaign, you would have written Photo Duplication Service at least. We've always felt a little edgy about the liberties taken with the word *photo* by technicians—such creations as *photomicrograph* and *microphotograph.* But now that the Library of Congress has put its approval on such word mergers we'll have to accept them graciously. Probably there are even now some subversive factions within the L. of C. whittling still further. If they aren't routed out, you'll wake up some morning to read "Fotomicrograf-duplicationservice"—which would, of course, be carrying things too far.

Sabotage

• • In a report on Vishinsky's remarks before the United Nations the other day, we learn that he nailed down a point thus:

"This fact is ineluctable, indubitable and inescapable."

The report notes that this characterization slowed up the English interpreter, indicating that the phraseology may have been simply a filibustering device. Worse than that, any English reader becomes so fascinated that he forgets to note that Vishinsky's fact isn't a fact at all.

Little Shove

• • With their usual precise manner of speaking, our friends in that right little, tight little isle across the sea have coined a long needed word for the industrial equipment man's vocabulary. In one of our British contemporaries, we note a picture of a "calfdozer"—a small bulldozer blade hung on a midget tractor. To complete the family, can anyone tell us what a "cowdozer" would be?

HERE'S HOW...

How to plan your
Toolroom
Heat Treating
Department
LINDBERG ENGINEERING COMPANY
LINDBERG ENGINEERING COMPANY

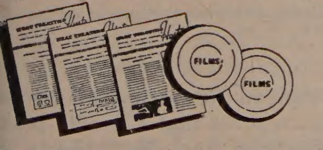
TO PLAN YOUR
TOOLROOM HEAT TREATING DEPARTMENT

Published to assist those planning new or expanded heat treating departments. It's yours for the asking.

Material contained in this 24 page booklet, prepared by the Lindberg Engineering Company, is based upon years of experience in helping design hundreds of toolrooms . . . plus additional information gained from the 24-hour-a-day operating experiences of the toolroom heat treating department of the Lindberg Steel Treating Company, the world's largest.

It helps arrive at total costs in advance • Shows recommended department layouts • Tells how to select furnaces of proper size • Gives prices of auxiliary equipment such as tongs, quench tanks, straightening presses, hardness testers, work benches, etc. • Contains loose template pages of furnaces, quench tanks, etc. and graph paper . . . a few seconds of scissor work shows you how your department will look.

To get your copy write or call your nearest Lindberg Engineering Company office or the Lindberg home office at 2452 West Hubbard Street, Chicago 12, Illinois.



Other helps for Heat Treaters. "Heat Treating Hints"—a publication covering the practical side of heat treating with strictly "how to do it" articles. Available on request.

"Heat Treating Hints", two movies, (color and sound) bring to the screen practical articles from the printed "Heat Treating Hints". Ideal for technical associations, plant showings, schools. Write for Bookings.

LINDBERG FURNACES

THOMAS Flexible COUPLINGS

. . . . are specified by engineers, wherever 100% Operating Efficiency is demanded

THOMAS Flexible COUPLINGS provide for Angular and Parallel Misalignment as well as Free End Float . . . and Eliminate BACKLASH, FRICTION, WEAR and CROSS-PULL

NO LUBRICATION IS REQUIRED!

TYPE DBZ
TYPE DSM
TYPE CM
TYPE ST
TYPE AM
TYPE SS

The Thomas All-Metal Coupling does not depend on springs, gears, rubber or grids to drive. All power is transmitted by direct pull.

TYPE DBZ-D
HIGH SPEED HEAVY DUTY FLOATING SHAFT TYPE FLEXIBLE COUPLING

WRITE FOR COMPLETE ENGINEERING CATALOG

THOMAS FLEXIBLE COUPLING CO.
WARREN, PENNSYLVANIA

Dear Editor:

GREAT LAKES STATEMENT

Sir:

In the Newsfront section in the issue of Nov. 2, the statements in the fifth paragraph are self-contradictory and are not in accordance with the facts. Great Lakes Steel Corp. did not notify its customers that any sheet and strip gages heavier than 18 gage will be furnished only in the hot rolled condition.

The largest demand for our cold rolled products is in gages No. 17 and lighter, but we have always furnished a smaller percentage of our cold rolled tonnage in 16 gage and heavier, and will continue to do so.

Due to the limitations of our mills it is not practical for us to produce hot rolled products lighter than No. 1 gage.

Within our manufacturing limits, we are furnishing any thickness of hot rolled and cold rolled products according to the actual requirements of our customers.

E. L. WETSTEIN
Vice President
Great Lakes Steel Corp.
Ecorse, Mich.

PROF. STRAUSS

Sir:

In connection with the article "Wh Discovered Stainless Steel" of Oct. 14 your readers might be interested to know that . . . Prof. D. Benno Strauss was retired by Krupp in 1934, but neither his fame nor his merits for German industrial development did keep the Nazis from sending him to concentration camp in Sept. 1944 where he perished shortly afterwards.

MAX LANFER
Pelham, N. Y.

CONN ROD BEARINGS

Sir:

We note in the Newsfront of Sept. 30 an item to the effect that a new method of lubrication of connecting rod bearings for two cycle engines has been developed. We would appreciate hearing from you regarding the needle bearing maker who is considering redesign of all bearings used for this application.

R. C. HEIDNER
Chief Outboard Engineer
West Bend Aluminum Co.
Hartford, Wisc.

Sir:

An item in Newsfront of the Sept. 30 issue reports that a needle bearing manufacturer has developed a new method of lubricating connecting rod bearings in 2-cycle engines that give much longer bearing life. Would you send us the name and address of the needle bearing manufacturer so tha

RAPER CORPORATION world's largest loom manufacturer
OWERS PRODUCTION COSTS WITH
J&L COLD-FINISHED JALCASE STEEL

J&L STEEL

Mr. Joseph Whalley holds a shuttle from a modern Draper high-speed rayon loom to how the Jalcase tips.—Demonstration Room in Draper Corporation's modern plant, Hopedale, Massachusetts.

Shuttle Tips* made of JALCASE last longer . . . are easier to machine and heat treat.

ost likely the fabric in your broadoth or oxford shirt was woven on Draper loom, because Draper Cororation is the world's largest manucturer of cotton and rayon looms. And on many of the shuttles in ese famous looms, the tips are ade from J&L COLD-FINISHED JALSE, the *original* open-hearth freeachining steel.

These tips must withstand *milns* of blows from the "pickers" at send the shuttle flying back and th across the loom as many as *225 nes a minute.* The steel must have iform heat-treating characteristics to produce tips with *hard* points, *soft* shoulders and *tough* stems. Besides, Draper wants a steel that machines freely to a smooth finish at high speeds, and a steel that conserves tool life. That's why Draper uses J&L COLD-FINISHED JALCASE. It reduces production costs!

Here is a steel that is practically "tailor-made" to your requirements. From the ten grades of JALCASE, you can select just the right properties that suit *your* manufacturing conditions best. The result is: Higher production . . . Longer tool life . . . A better product. No wonder that J&L COLD-FINISHED JALCASE has been the *leading free-machining steel* for more than 25 years!

We have just published a new booklet describing the ten grades of J&L COLD-FINISHED JALCASE Steel. Let us send you a copy. It's free. The coupon is for your convenience.

Jones & Laughlin Steel Corporation
403 Jones & Laughlin Building
Pittsburgh 19, Pennsylvania

Please send me your new booklet on J&L COLD-FINISHED JALCASE—the *original*, open-hearth, free-machining steel.

NAME________________________

ADDRESS________________________

____

ONES & LAUGHLIN STEEL CORPORATION

om its own raw materials, manufactures a full line of bon steel products, as well as ain products in OTISCOLOY JALLOY *(hi-tensile steels).*

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURALS AND PLATES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

Unexcelled Performance
on all metal cutting operations...
RUTHMAN GUSHER
COOLANT PUMPS

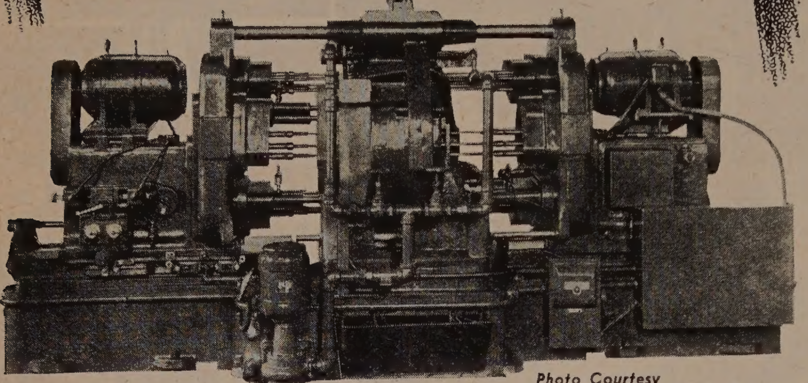
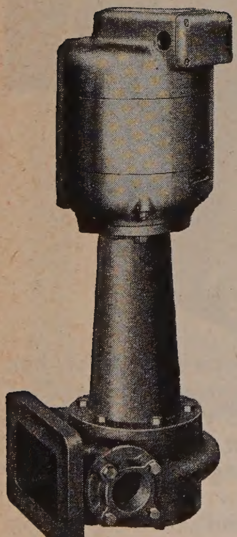


Photo Courtesy
Morris Machine Tool Company



Expertly designed, precision built, Ruthman Gusher Coolant Pumps give year after year of unexcelled performance. Less vibration, fewer parts to wear, guarantee a long trouble-free life for Ruthman Gusher Pumps on your metal cutting equipment. Illustrated above is a Morris Two-Way Drilling, Boring, and Reaming Machine with 44 spindles mounted in Cluster Heads; equipped with Model 11024 Short Ruthman Gusher Coolant Pump.

MOLTEN METAL PUMPS
We manufacture a special Ruthman Gusher Pump designed to handle molten metal. Write us today for full details and capacities.

THE RUTHMAN MACHINERY CO.

we may contact them for more information.

R. H. BOHMAN
Project Engineer

Gale Products
Galesburg, Ill.

● Parks Engineering Co., 2314 S. Howell Ave., Milwaukee.—Ed.

NEW DIESEL ENGINE

Sir:

I would greatly appreciate knowing the name of the company who is experimenting with the new design diesel engine using brazed steel stampings about which you write in the Oct. 14 issue in Newsfront. We have done a great deal of work along this line and would appreciate being able to compare notes and show our stamped overhead valve rocker arms and brackets to this concern.

BEN L. CREW
District Salesmanager

Toledo Stamping & Mfg. Co.
Toledo

● Sorry, the company doing this work prefers to remain anonymous for the time being. However, we are forwarding your letter to them.—Ed.

PIPE IMPORTS

Sir:

Some weeks ago there was mentioned in the columns of certain pipe that might be available overseas for use in this country. It was suggested that we contact the export-import agency in New York. The published address was not complete and on inquiry following the return of our letter by reason of incomplete address you were good enough to give us the information that the individual could be reached at a certain APO address. Also, at the same time you were good enough to forward the letter which by that time we had sent to you for that purpose. In the circumstances you are entitled to a copy of the reply we received from the agency and accordingly such copy is attached hereto for your information.

W. G. STEWART,
President

Pelican Well Tool & Supply Co.
Shreveport, La.

(Editor's Note: The following letter on the export of oil well casings from Germany to the U. S. is from the Joint Export-Import Agency (US-UK3 to Reader Stewart).)

Sir:

With regard to the extract from THE IRON AGE of Sept. 23rd, it can be stated that export of seamless oil well casing to the United States has taken place during recent month but not to the extent stated. Contracts in hand at the moment amount to approximately 7500 tons to 8 different American undertakings.

The present situation is that whilst a capacity for manufacture exists the raw material situation, coupled with the fact that order books for the 2 principal firms concerned are full for

THE FASTEST THING IN FASTENINGS ◀

TINNERMAN
Speed Nut
SAVINGS STORIES

"BENDIX Saves 8 ways with SPEED NUTS*"

SAYS MR. WALLACE F. OLIVER,
Vice-President and Director of Engineering, Bendix Home Appliances, Inc.

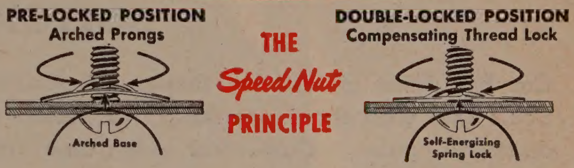
"WE HAVE LEARNED from experience that SPEED NUTS provide eight important savings in the production, assembly and servicing of Bendix home appliances . . .

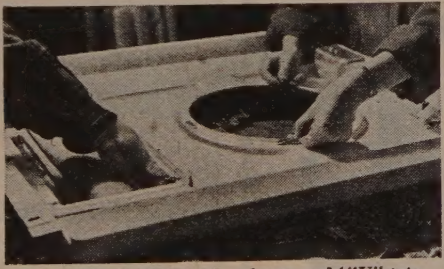
- SPEED NUTS save time by simplifying our design problems . . .
- reduce our total assembly time because they start easier, pull down faster and do not have to be held with a wrench . . .
- provide blind location attachments that take less time, less skill . . .
- save us the investment in expensive welding and riveting equipment . . .
- reduce our materials costs by performing multiple fastening functions that eliminate lock-washers and other parts . . .
- save weight through use of lighter materials without sacrificing strength or rigidity . . .
- minimize shipping damage to our products by protecting fastening against vibration loosening . . .
- and . . . save our servicing time because they will not "freeze" to bolts or screws exposed to corrosion.

"In the blueprint stage . . . that's where we always specify SPEED NUTS. We take full advantage of Tinnerman engineering service, too, making certain that we achieve the utmost in assembly efficiency."

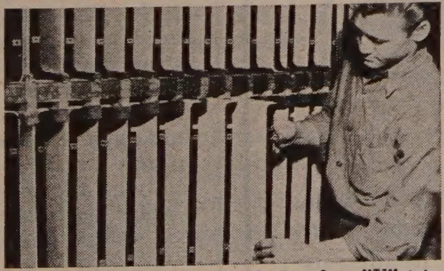
It's possible that SPEED NUTS can provide valuable savings in your assembly operations. Call your Tinnerman representative for details on our Fastening Analysis Service—he's listed in major city telephone directories. Tinnerman Products, Inc., Cleveland 13, Ohio.

In Canada: Dominion Fasteners Limited, Hamilton.
In England: Simmonds Aerocessories, Ltd., Treforest.
In France: Aerocessoires Simmonds, S. A. Paris.



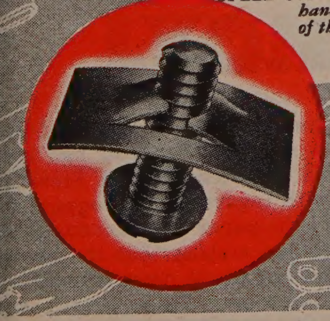


Eleven SPEED NUTS, 7 Latch-type and 4 "U"-type, are attached to washer front panel at high rate of 65 panels per hour. Blind location attachment of door sections and lower front panels are then accomplished with ease and speed on the moving assembly line.



Right in the storage rack—that's where "U"-type SPEED NUTS are quickly and easily slipped on by hand, ready for vibration-proof attachment of these top panels of the Gyramatic Washer.

SPEED NUTS were specified for the new Bendix Gyramatic Washer while it was still in the blueprint stage . . . the result: maximum assembly savings.



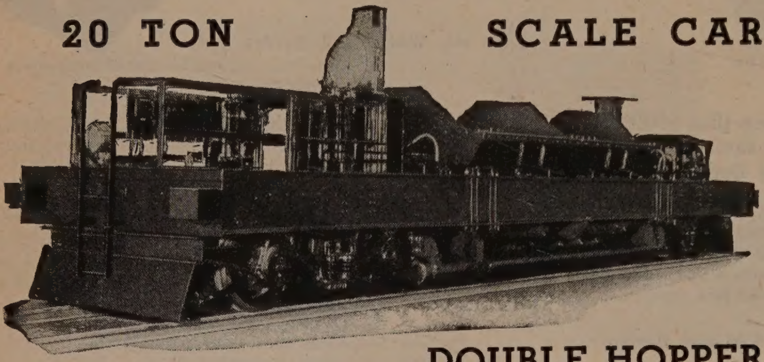
TINNERMAN Speed Nuts

*Trade Mark Reg. U. S. Pat. Off.

MORE THAN 4000 SHAPES AND SIZES

ATLAS
INTRA-PLANT CARS
DESIGNED AND ENGINEERED
FOR YOUR SPECIFIC NEEDS

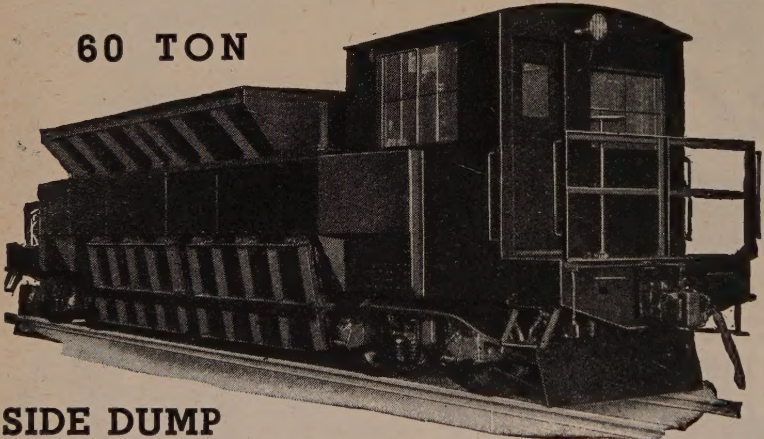
20 TON SCALE CAR



DOUBLE HOPPER
BOTTOM DUMP

Car has Atlas underslung suspension scales with Atlas 24" Scale Dial with chart recording. Air brakes and air-operated discharge gates. Cast steel side-frame trucks with Roller Bearings.

60 TON



SIDE DUMP
ORE TRANSFER CAR

900 cu. ft. capacity, two-section hopper with electric heaters. Each section has independently-operated discharge gates. Car is equipped with air brakes, automatic couplers, headlights and whistle. Each truck mounts one 75-HP motor.

Atlas Engineering Service is always at your service.

THE ATLAS CAR & MFG. CO.
ENGINEERS MANUFACTURERS
1140 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

some time to come, would forbid any further orders being fulfilled in the immediate future. If, however, you are considering forward buying it is suggested that you contact the undermentioned firms.

Rheinische Roehrenwerke, Muelheim-Ruhr

Mannesmann Roehrenwerke, Duesseldorf

In addition to the above it might be advisable to forward your inquiry to the exporting firm of Stahlunion GmbH, Duesseldorf for possible functioning by some of the smaller mills.

W. P. JENKINS
For chief, Export Branch
Joint Export-Import Agency (US-UK)
Frankfurt on Main, Germany

CR-CO ALLOY

Sir:

We are interested in having a chrome cobalt alloy formula compounded. If you can give us the name of some smelting company which does this type of work we would appreciate it greatly.

E. A. BENDEROTH
Warren-Laboratories
Baltimore 1, Md.

● Several possibilities are being forwarded. —Ed.

COLOR METALLOGRAPHY

Sir:

I would appreciate tear sheets of the articles, "Color Metallography," and "As-Cast Structures in Cast Steels," THE IRON AGE, Oct. 14, 1948.

J. A. KEARNEY
Crucible Steel Co. of America
Harrison, N. J.

NEW ELECTRODE SPECS

Sir:

The article in the October 28 issue covering "New Welding Electrode Specifications" is a fine one and I want you to know we appreciate it very much. The only way that maximum benefits can come from the standardization work of our society is to have those concerned with the materials covered know more about the standards and use them, and your article on the welding electrodes will certainly go a long way toward achieving a wider use of the specifications.

ROBERT J. PAINTER
Asst. Secretary
American Society for Testing Materials
Philadelphia

YOU ARE WELCOME

Sir:

We thank you for your letter of Oct. 19th, advising us that you had contacted the American Iron & Steel Institute with regard to our request for a copy of the paper "Continuous Strip Pickling" and stating that the above-mentioned Institute were sending a copy of the paper under separate cover.

ANOTHER
LYON CONTRACT ITEM
MADE TO
Customer's Specifications
Another LYON

How to get prompt delivery on sheet metal products:

YOU
FURNISH THE STEEL
LYON
WILL MAKE THE PRODUCT

Many customers have found it possible to supply us with steel in 12 to 24 gauge sheets. In such cases, we will buy the steel from you and ship the pound-for-pound equivalent in

EITHER

. . . any selection of LYON standard products (see partial list below) at regular published prices . . .

OR

. . . assemblies, subassemblies, parts, etc., for your product—to your specifications—in an even wider range of gauges—8 to 30.

For complete details, write or ask your nearest LYON District Office.

LYON METAL PRODUCTS, INCORPORATED
General Offices: 1136 Monroe Ave., Aurora, Ill.
Branches and Dealers in All Principal Cities

A PARTIAL LIST OF LYON PRODUCTS

- Shelving
- Lockers
- Wood Working Benches
- Economy Locker Racks
- Kitchen Cabinets
- Display Equipment
- Hanging Cabinets
- Welding Benches
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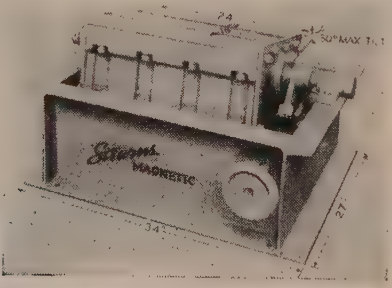

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E. W. MULCAHY
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CAVITOMETER

Sir:

In the Sept. 16 issue, a Newsfront commented on a new device about which we would like to obtain more information. Near the bottom of the page, you refer to the use by one of the large automobile manufacturing plants of a device called "Cavitometer" for 100 pct inspection of cylinder head cavities in engines. We would appreciate your advising us as to which automobile manufacturer is using this instrument and by whom it is manufactured.

J. C. SMACK
Sales Engineer
Sperry Products, Inc.
Danbury, Conn.

- Oldsmobile is the auto company.—Ed.

REQUEST FOR SACHS

Sir:

Please send me a reprint of the article "Fatigue Strength Properties of SAE X4130 Tubing," by George Sachs, which appeared in the March 23, 1944 issue.

MILTON A. HOPF
Superintendent
Animal Trap Co. of America
Lititz, Pa.

CUT TACKS

Sir:

As you know, these cut tacks and cut nails are cut from strip steel. We are trying to locate the company or companies who produce the machinery for making the tacks and nails, and will highly appreciate the favor if you will kindly furnish us the names of any such equipment people.

M. V. DREYSPOOL
General Manager
Steel Barrel Fittings Co.
New York

- A list has been sent you.—Ed.

TRADE NAME DIRECTORY

Sir:

It would be appreciated if you would indicate how a copy of your Directory of Trade Names may be obtained. This is desired for official use in connection with the work of this office, relative to research, development and application of materials.

ALDEN P. TABER
Colonel, Ordnance Dept.
Assistant
Office of the Chief of Ordnance
War Department
Washington

- Copies are available to readers at $3 each.—Ed.

The
IRON AGE

Vol. 162, No. 22 November 25, 1948

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dexed in the Industrial Arts Index and e Engineering Index. Published every ursday. Subscription Price United ates, its Territories and Canada $8; her Western Hemisphere Countries 5; Foreign Countries $20 per year. ngle copy, 35c. Annual Review Numr, $2.00.

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Statesmanship

THE militant group of old guard New Dealers that served as a board of strategy for the President during the campaign believes that it has the right formula for campaign success. Moreover it holds that the election constitutes a mandate "to implement" the Democratic position on the issues of the campaign. This group is entitled to the considerable satisfaction which accrues to any contestant in a hard-fought struggle who comes out on top after all the experts had allotted him six feet of turf and a sharp spade. The wise winner in such a contest will examine carefully the implications of his victory. Particularly is this true where the welfare of 140 million people is at stake and the rest of the world looks to this leadership, confirmed in power by a popular election for the first time, to guide it through a tense and explosive postwar period.

President Truman and his entourage are confronted by a challenge which will test his statesmanship. We do not mean by this merely the skill with which he handles his diplomatic tasks. That is certainly a part of this higher quality of leadership. We mean also the tolerance and understanding with which he approaches domestic problems that may affect our entire future. In this he can well afford to take a page from the campaign position of his defeated adversary. Dewey did appeal for unity, the elimination of class jealousies, and national teamwork in promoting domestic harmony and continued material progress.

The President would be well advised to avoid the temptation "to rub it in." A large element in the South chose to abandon him on the issue of state rights. Fortunately for Truman this defection did not prove fatal to his candidacy. It is likewise true that a preponderant majority of the business and financial groups hoped that the election would place a period on the New Deal and bring a revision in national policies. Whether such an attitude is reactionary, as some of the more effervescent and exultant retainers of the President charged, is beside the point.

The fact is that the million voters who cast their ballots for Governor Thurmond contain many of the leading citizens of the South and that their program of state rights contains a political principle which the founders of this government considered necessary in an enduring democracy. If Harry Truman has the vision to look through and beyond the next four years he will try to accommodate the valid ingredient in the state rights case and reject the proscription of these dissidents which some of his advisers are urging.

A similar position might well be taken toward the "economic royalists" who did their best to defeat him. These men represent the business leadership of the country. The great economic power which America now has, a bulwark against the designs of totalitarians and a comfort to the struggling democracies of the west, is due in part to the conspicuous talents which these men have been able to exercise under conditions of freedom. They constitute a national asset which it would be folly to repudiate.

If Truman is big enough, he will use sugar in handling both groups instead of a club.

Joseph Stagg Lawrence

"I like th
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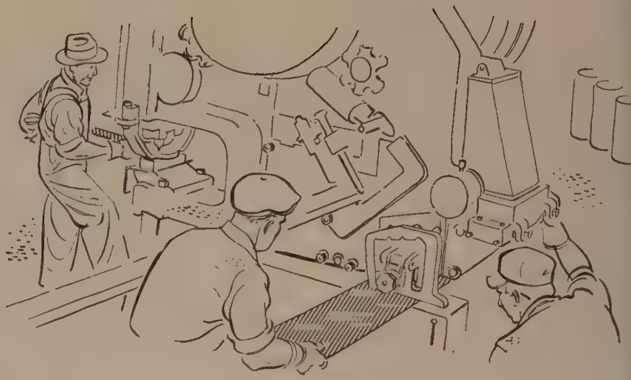

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IRON AGE
November 23, 1948

NEWSFRONT

The feeling is growing in steel circles that prices for equipment and plant nstruction comparable with prewar costs are out of the question. The problem of tting aside money for new equipment as the old wears out holds top drawer rank. e steelmaker recently planned an improvement at what he thought was a good timate—$4 million. By the time planning was completed, the cost was up to million. A short time later it was over $7 million. By the time the job is ne he estimates it will cost about $9 million--but it will be carried through.

Washington sources look for approval of a multi-billion dollar military lendase program but they doubt that even quick passage of such an act by Congress ald produce more than $500 million in expenditures in 1949. Reason--it would be st as slow starting as our present rearmament program on which equipment penditures to date have been nominal.

Wind tunnels that will require up to 1 million hp each are being seriously anned but no adequate power source can be found to provide the 3 million kw ntemplated under the program.

Inland Steel's recent action asking customers to cut back on deliveries if the eel is not actually needed for any given period received a lot of comment. stomers wrote back heartily commending the company for its action, but stated most to the man "such conditions don't occur with us."

The big Davenport, Iowa, sheet mill of the Aluminum Co. of America that was to ve been in production last March at the latest, has not yet started to roll eets on a production basis. Shortage of ingot metal is the cause of the plant's ilure to begin operations. The recent action of the northwest power authorities establishing a 2-hr period when power may be interrupted could further gravate the situation.

Top automobile stylists Helene Roth and George W. Walker gave this picture of e car of tomorrow to Detroiters recently: more gadgets including things like aters for baby bottles and canned soup; umbrella holders and safety belts; more citing color contrasts and less chrome. Walker believes that modern cars have ached just about the maximum length and width and have about as much interior om as can be expected. He doesn't expect the present basic designs to be anged importantly for at least several years.

Stainless steel producers are working to bring down production costs by means more efficient rolling and handling facilities. Many producers have installed versing mills for the continuous rolling of wide strip for use as sheet. One oducer is installing a Steckel mill for continuous hot rolling of wide strip to ge which eliminates the cost of intermediate anneals in conventional cold lling.

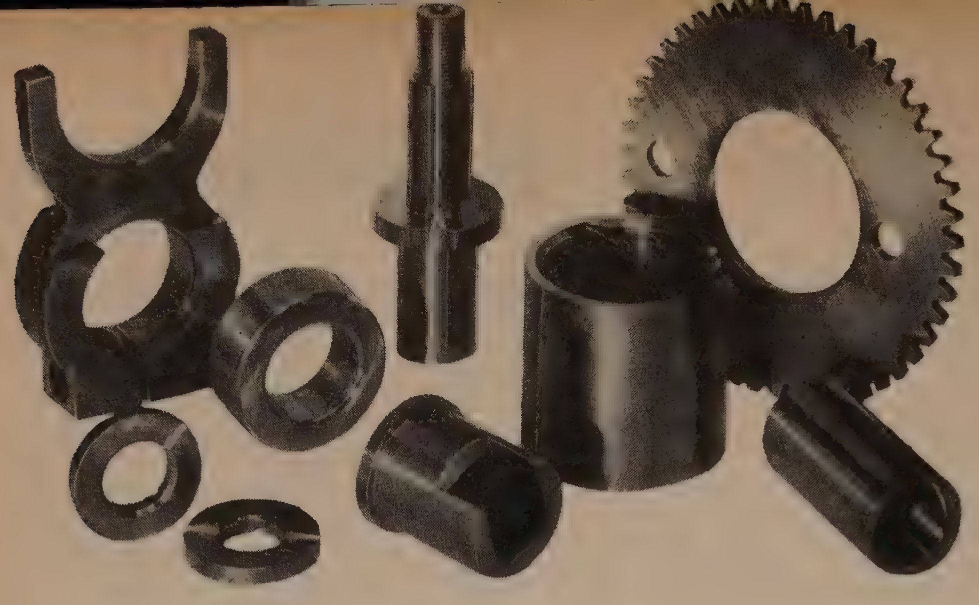
Some steel people are well aware of the fact that the gap between them and the blic is wider than ever. Some hard thought is going into "what to do?" It may quite a while before anyone in the industry finds an answer to that question-- it is ever found. But effort will be made to find out why this situation has sted. Then something drastic may be done.

Offerings of ingots to steel hungry car manufacturers are increasing. Some gots are being offered at prices as high as $116. In this case the finished eel would hit $265 per ton. Steel ingots produced by foundries are an important ctor in the present market, according to informed sources.

What bothers a lot of industrialists is that apparently they can get all the eel they want if they are willing to pay fancy gray market prices. A fact often rlooked is that one can buy all the cars he wants, too — if he pays through nose.

Engineers of one of the large aircraft manufacturing plants point out that most 10 pct of the airframe weight of the Flying Wing bomber is rubber.

Swedish charcoal pig iron is hitting United States ports. So far over 1054 s have been shipped here. Of this amount, 700 tons came over in July alone.



TYPICAL aluminum bronze applications, including various machine tool parts, a bevel gear, a plug valve and a pickling basket fabricated from extruded aluminum bronze rods and welded.

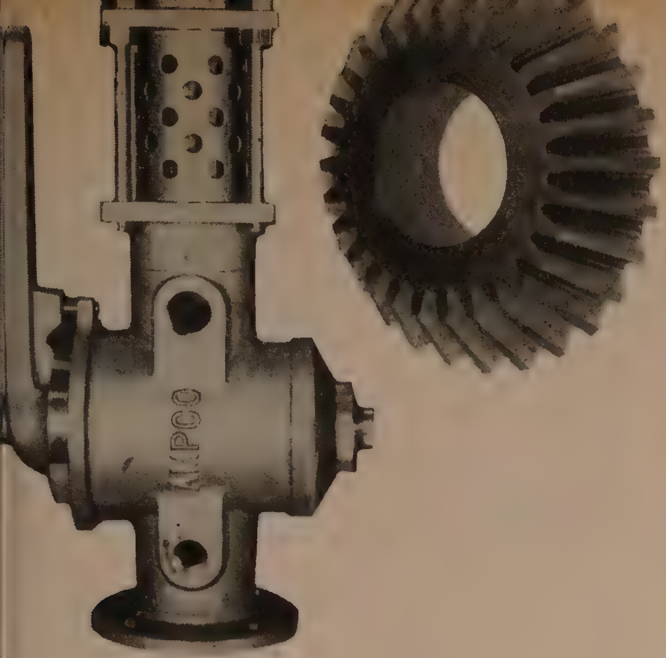
ALUMINUM BRONZE ALLOYS—

Metallurgical characteristics of the aluminum bronze alloys are such as to present opportunities for a variety of industrial applications. Considerable flexibility can be realized insofar as antifriction qualities, thermal conductivity, wear, impact, fatigue and corrosion resistance are concerned, making possible a wide selection of desired properties. Of interest also is the adaptability of aluminum bronzes for service at from 1000° to —295° F.

METALS have named the milestones in history, with the era of bronzes the first of them all; however, through the centuries of progress in developing and using metals, the bronze pioneer clan has often faltered, and for the most part, failed to keep pace with the other prominent alloys of lesser heritage. Stagnated outdated compositions, obscure inadequate properties, confusing and overlapping specifications and vague qualifications, have crippled respect for man's oldest alloy.

Lately there has arisen a family of bronze alloys which may help regain the prestige of copper-base alloys for modern production uses. Composed of copper, aluminum and iron, the alloys present no handicap to procurement, and hence do not depend on international relations or conditions, nor are they liable to extreme price fluctuations which sometimes characterize imported alloying agents. Furthermore, variation of only three common ingredients and close production control make available a complete series of alloys ranging from soft grades suitable for bearings, gears and other uses common for bronzes to a very hard alloy qualifying for some services normally reserved for ferrous metals.

For instance, table I shows a basic series of high iron aluminum bronzes where grade 12 has a hardness of a little over 100 Bhn, while grade 22 reaches 331 Bhn with only an addition of approximately 5 pct Al and 2 pct Fe. This particular list of cast alloys, comprised of six compositions, plus four heat-treated versions, in



Their Properties and Applications

◦ ◦ ◦

By JOHN C. KEMP

Development Engineer,
Ampco Metals, Inc.,
Milwaukee

◦ ◦ ◦

itself presents opportunities for a choice of high physical properties for many services. Still other somewhat similar analyses have been developed to offer an even wider selection of properties. Characteristics such as anti-friction qualities, thermal conductivity, wear, impact, fatigue or corrosion resistance can also be more highly developed within this family of alloys by composition variations, by heat treatments or through the different forms of castings or wrought materials available.

Outstanding among the qualifications of aluminum bronze is its unusual ability to withstand wear, due primarily to the presence of an inter-

TABLE I

A series of high iron aluminum bronzes for castings showing typical range of physical properties available. Hyphenated grade numbers indicate heat treated versions.

rade	Chemical Composition*		Ult. T. S., Psi	Y. S. (0.10 in. offset), Psi	P. L., Psi	El., (in 2 in.), Pct	R. A., Pct	Hardness		Modulus Elasticity, Psi (000 omitted)	Density, Lb per cu in.	Electrical Conduct., Pct	Thermal Conduct., CGS	Elastic Limit Compr., Psi	Ultimate Compr., Psi	Charpy, Ft-lb	Fatigue Strength, Psi
	Al,	Fe, Pct						Bhn 3000 kg)	Rockwell								
	8.5 - 9.3	2.50-3.25	80,000	30,000	14,000	40.0	40.0	131	74B	16,100	0.2791	12.8	0.20	18,000	119,200	25	25,000
	9.60-10.30	3.0-4.0	90,000	32,000	16,000	22.0	22.0	146	80B	15,385	0.2752	12.9	0.19	22,000	124,600	10	29,000
	10.30-11.0	3.0-4.25	90,000	37,000	18,500	14.0	12.0	174	88B	14,350	0.2738	12.76	0.18	30,000	136,430	10	32,000
-13	10.30-11.0	3.0-4.25	90,000	33,000	15,000	18.0	16.0	156	83B	14,350	0.2742	12.7	0.18	28,000	140,000	15	30,000
-22	10.30-11.20	3.0-4.25	100,000	53,000	34,000	6.0	6.0	223	97B	15,450	0.2745	12	0.18	50,000	155,000	6	36,000
-23	10.30-11.00	3.0-4.25	100,000	45,000	31,000	14.0	14.0	187	91B	15,450	0.2745	12.6	0.18	45,000	150,000	10	34,000
	11.30-12.20	3.25-4.50	85,000	40,000	19,500	4.0	3.5	207	95B	12,000	0.2683	10.7	0.17	45,000	146,000	4	....
-13	11.30-12.20	3.25-4.50	85,000	35,000	18,000	6.0	5.0	202	94B	12,000	0.2689	10.7	0.17	42,000	145,000	6	....
	12.60-13.40	3.5-5.0	75,000	55,000	....	1.5	....	285	29C	13,200	0.2580	10.2	0.16	50,000	160,000	2	....
	13.6-14.4	4.0-5.25	85,000	70,000	....	0.5	0.0	331	35C	13,960	0.2571	9.9	0.16	65,000	171,000	2	....

* Copper is base metal. Constituents other than aluminum and iron total 0.50 max.

metallic compound developed to an effective extent within certain of these alloys. Fig. 1 shows the extent of this phase as cloverleaf-like particles of the intermetallic compound uniformly dispersed across the section. These minute particles are extremely hard and act as tiny pedestals in the softer, but tough aluminum bronze matrix, reinforcing the entire composition and retarding wear.

Recent tests of one of these alloys in rolled sheet form for the gib liners in large boring bars, for example, showed that not only did power consumption at 60 ipm feed drop to ⅝ hp, from the 2¾ hp required for moving the column when conventional cast iron ways were used, but many times the life was realized. Proper lubrication was provided, but conditions being equal, it was also found that the aluminum bronze ways permitted speeds without chatter as low as ½ ipm while the cast iron was not steady enough for precision work under 2 ipm.

In innumerable cases this intermetallic compound, combined with the proper grade of aluminum bronze, has accounted for the difference in obtaining longer service life for bushings, bearings, gears and even drawing and forming dies. In this latter example, the hardness of recommended alloys range from 300 to approximately 400 Bhn which, of course, does not even approximate that of normal hardened die steels. The principle is that this hard aluminum bronze with its precisely developed structure permits the sliding action of a dissimilar metal over its surface with less friction and wear.

These characteristics are critically important when forming and drawing stainless steel. Aluminum bronze dies are also extensively used for drawing sheet stock of pickled carbon steel, zinc, silver, lead, Inconel and Monel metal. This application also includes the forming, bending and reduction of tubes in the above metals.

A large producer of stainless steel containers found that by using an aluminum bronze die he could obtain 77,000 pieces of a heavy gage stainless cup part before redressing, whereas 3500 pieces was the average life from the conventional steel die. A majority of stainless steel cooking utensil manufacturers report substantial reductions in finishing costs when aluminum bronze dies are used. Automotive hub caps, headlights and other accessories and trim call for the use of this die material, as well as home appliance parts dairy containers, window frames, sinks and switchboxes. In general, they will excel where surfaces must be free from scratches, and where seizure and/or galling would cause inadequate die life. Aluminum bronze dies and/or die inserts, like steel dies, will not give good service if used for drawing scaly or unpickled stock.

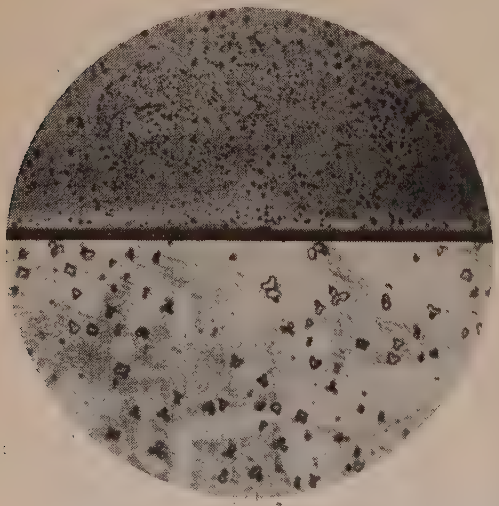


FIG 1—Microstructure of high iron aluminum bronze (upper half 100X, lower half 1000X), showing extent and distribution of intermetallic compound which appears as clover leaf-like particles dispersed uniformly throughout the section.

Of interest also is the adaptability of aluminum bronzes for abnormal temperature services, both cold and moderately high. The physical properties of most ferrous materials are seriously affected in the lower temperature ranges, becoming quite brittle even at 0°F, and many nonferrous alloys suffer serious losses with a rise of several hundred degrees above room temperature. Aluminum bronzes, however, seem to adapt themselves to a wider range, as shown in fig. 2.

Subzero temperatures as low as —295°F, actually cause an improvement in physical properties except for a drop in impact and reduction of area; hence these alloys are acceptable for low temperature service such as the handling of liquid oxygen, or high altitude applications.

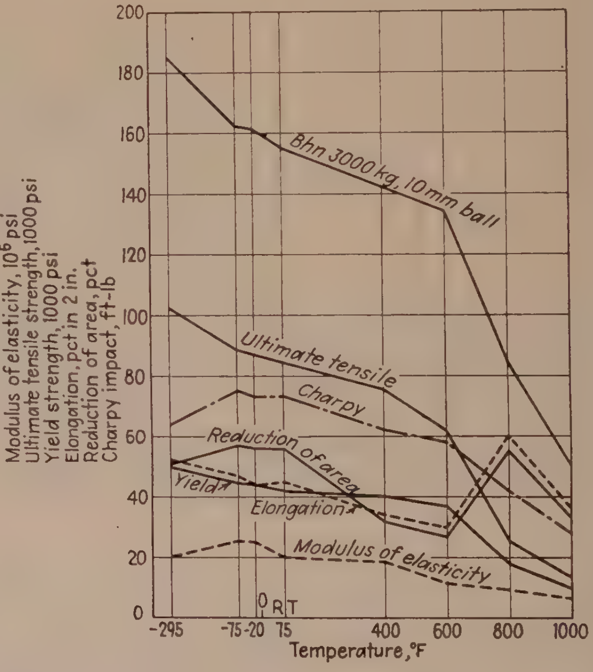


FIG. 2—Physical properties of annealed aluminum bronze rolled sheet (Ampco grade 8) at various temperatures. Data taken from Battelle Memorial Institute report No. S-1003, dated May 20, 1946.

The range above normal is just as interesting, and perhaps more usable, particularly in view of current developments in condensers and heat exchangers operating in high temperatures. Some reduction of properties results from an increase in temperature, but up to 600°F all ratings, particularly yield strength, maintain a much higher level than for customary condenser tube alloys. Even to temperatures of 800° to 1000°F a comparatively high proportion is retained.

Of equal importance for this type of service is the surprising effect of heat upon the thermal conductivity of aluminum bronzes as shown in fig. 3. Like other copper-base alloys, a fairly high rating for heat transfer is found at normal temperatures. Increases to the higher ranges of 600°, 900° and 1200°F, however, show a remarkably proportional improvement so that at 1200°F it is almost double that at 80°F.

To these advantages of high strength and thermal conductivity at elevated temperatures must also be added another even more significant advantage—resistance to corrosion and scaling. Because of the many contingencies and variables that must be accounted for in any corrosive medium, it is difficult to definitely classify any metal for its exact resistance. Experience with these alloys, however, has qualified them for many severe and troublesome acid and caustic conditions. Excellent records have been compiled in pickling services. Frequent applications for these properties as well as the wear resistance is found in canning machinery, brewery equipment, many cellulose products processors and oil well and refining installations. Marine equipment or other requirements subject to sea water or brine attack have found aluminum bronzes highly satisfactory.

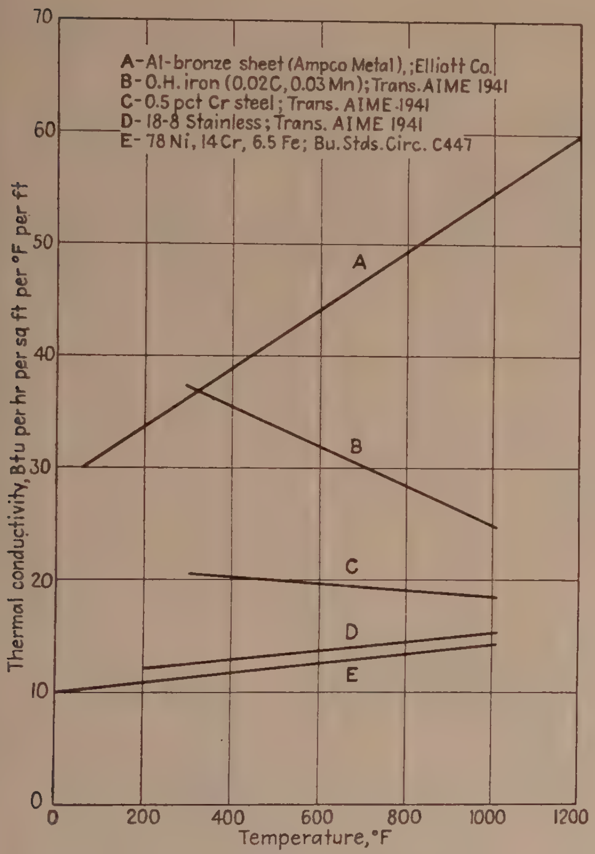


FIG. 3—Thermal conductivity of various alloys normally used for heat exchanger tubes.

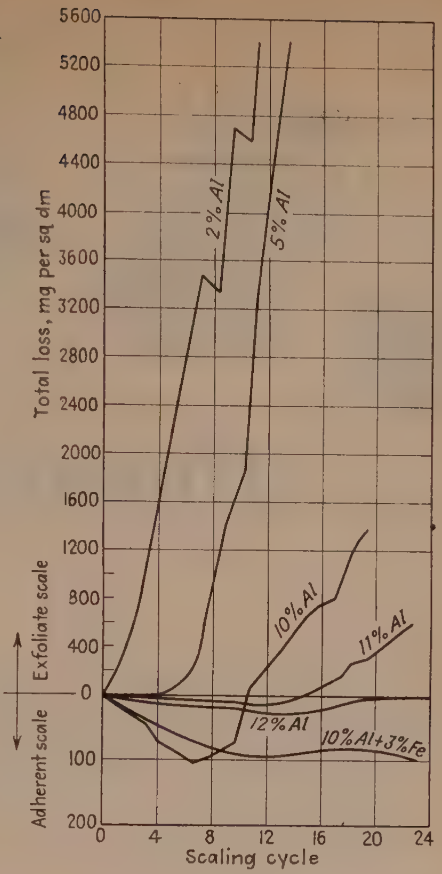


FIG. 4—Scaling of aluminum bronze alloys in atmosphere of dry air containing 5 pct SO_2. The ultimate scaling rates of the 2 and 5 pct Al alloys were established after 15 and 22 cycles, respectively.

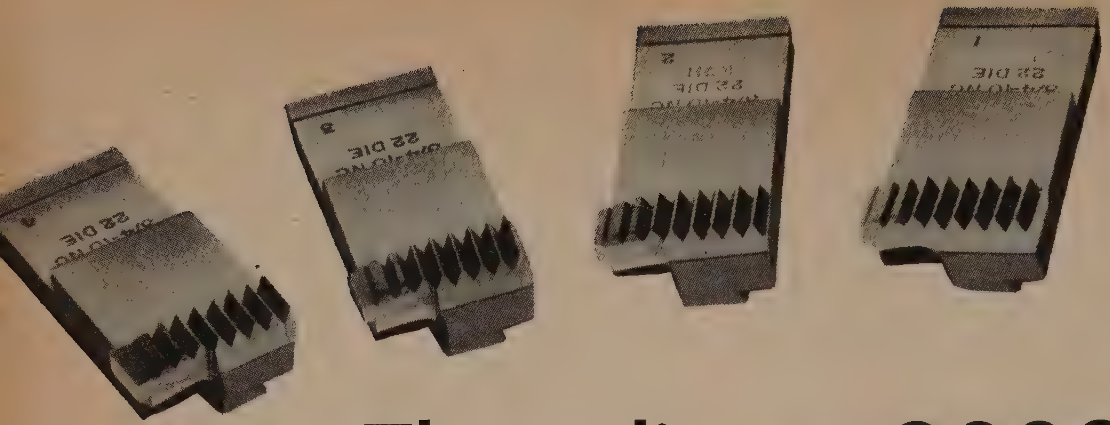
The nonscaling qualities of these alloys can be more definitely qualified by reference to report RRA-527 of the British Nonferrous Metals Research Assn. wherein results are given on the tests of 18 materials for resistance to oxidation and scaling at 400°C (752°F). The materials investigated were three high conductivity coppers, two arsenical coppers, six aluminum bronzes (ranging from 2 to 12 pct Al—which proved to form a group of alloys of high scaling resistance), a group of alloys containing small amounts of common elements added individually to copper, and several other copper base alloys used industrially at elevated temperatures such as silicon, nickel and tin bronzes.

These materials were subjected to the following atmospheres at 400°C (752°F) to determine their adherent or exfoliate scaling qualities:

(1) Dry air, free from acid impurities; and (2) the same air stream plus the following additions by volume; 10 pct H_2O vapor, approximately 0.1 pct SO_2, 5 pct of SO_2, and moist hydrochloric acid (approx 0.1 pct HCL and 1 pct H_2O).

The values obtained with dry air were to afford a basis for comparison with the other atmospheres which were intended to accelerate the attack or to simulate possible service conditions. The amount of exfoliate scale removed in each

(CONCLUDED ON PAGE 98)



CARBIDE tipped thread chasers that permit threading operations at normal turning, facing and chamfering machine speeds.

Threading at 2000 RPM

THREADING is one machining operation that has necessitated a reduction in machine speed causing part production to be slowed up unless additional capacity is provided. With the advent of carbide tipped thread chasers with ground thread form, recently announced by Jones & Lamson Machine Co., Springfield, Vt., new standards for high speed, high production threading are possible.

With a typical setup such as shown in fig. 1, tooled on a No. 3 (1½x10 in.) ram-type turret lathe, the stud shown is machined at a constant

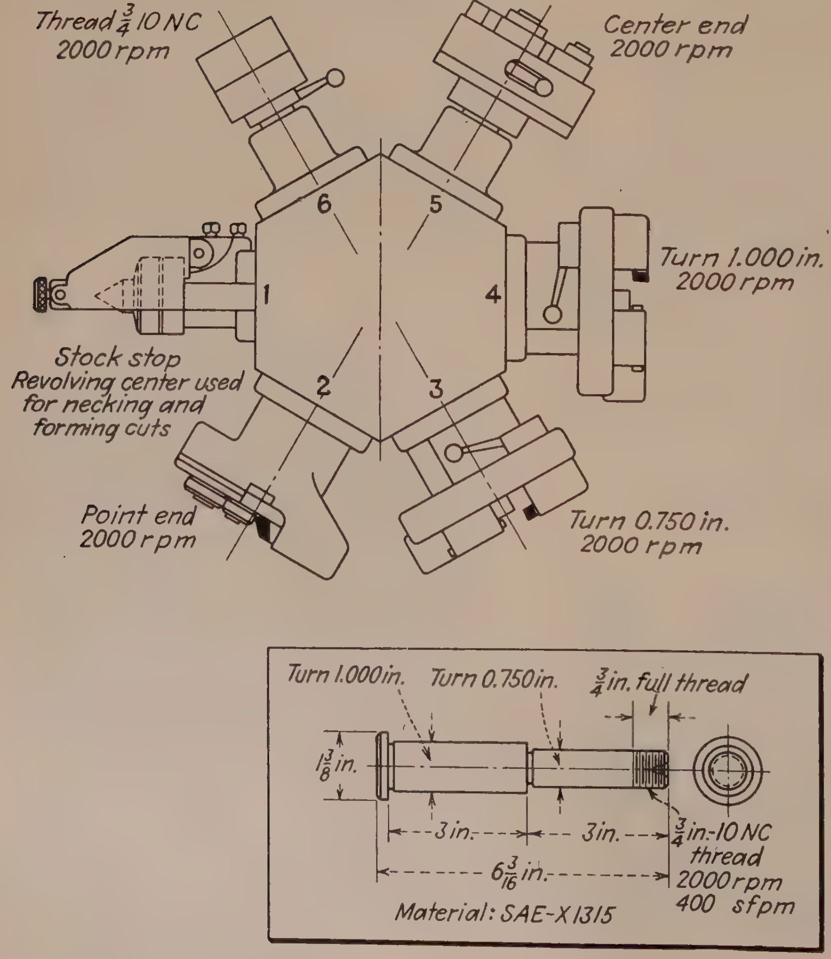

Thread 3/4 10 NC
2000 rpm
Center end
2000 rpm
6
5
1
4
2
3
Turn 1.000 in.
2000 rpm
Stock stop
Revolving center used for necking and forming cuts
Point end
2000 rpm
Turn 0.750 in.
2000 rpm
Turn 1.000 in.
Turn 0.750 in.
3/4 in. full thread
1 3/8 in.
3 in.
3 in.
3/4 in.-10 NC thread
2000 rpm
400 sfpm
6 3/16 in.
Material: SAE-X1315

FIG. 1—This turret tooling is used on a J&L No. 3 ram type turret lathe for turning and threading the steel stud shown in the insert. Threading with carbide tipped chasers, is done at a spindle speed of 2000 rpm and at a machining speed of 400 sfpm.

By S. T. HICKS
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Springfield, Vt.*

With Carbide Tipped Chasers

Through the use of carbide tipped thread chasers, threading of SAE X1315 steel studs as described in this article, can be accomplished at machine spindle speeds of 2000 rpm and cutting speeds of 400 sfpm, eliminating the necessity of reducing machine speeds for threading operations.

° ° °

machine spindle speed of 2000 rpm. Heretofore, jobs such as this SAE X1315 stud would have to be handled with carbide tooling at all positions except threading and possibly cutoff. The threads would be cut at 25 to 30 sfpm with high speed steel chasers. On this stud, the thread is cut at a speed of 400 sfpm, about a 15 to 1 step up in surface feet over the previous rate, and the spindle speed remains constant throughout the sequence of the cuts.

The complete machining cycle time is 1 min, while the actual threading time is about 1/3 sec at 400 sfpm. A high quality finish with a Class III tolerance is obtained. The machining sequence is shown in table I.

The job is not a stunt demonstration. It is a standard part, a typical run-of-the-mill bar machine operation, and, with the exception of the threading operation, is routine in every respect. The die head, see fig. 2, is a standard stock model tangent die, with no special structural features. The die, model 22S-23S, has a range of ⅝ to 1½ in. work diam and it operates on the tangent or end-cut principal using a set of four chasers; the carbide tipped chasers are special. The die head opens automatically and withdraws the chasers at the end of the cut.

The importance of this new development is apparent when it is considered in terms of production threading machinery as well as carbide tooled automatic and turret type lathes. The new threading speeds make possible a balanced spindle speed for the full sequence of operations.

Investigation of the possibilities of carbide type chasers has been carried on intensively since 1942 at Jones & Lamson. Special purpose grinding machines, developed and built by J&L for the manufacture of the standard high speed steel chasers, are used to produce a highly accurate ground-in helix angle and thread form in the solid carbide tips. For the present, production is limited to standard 60° thread forms.

After satisfactory preliminary results were obtained at the factory, field test installations were

TABLE I

Machining Cycle on Stud Job

1⅜ in. Bar Stock — Hold in Collet Jaws — Machine in Sequence Below

Hexagon Turret Position	Cross Slide Position	Operation	Machine Data			
			Speed, Fpm	Spindle Rpm	Feed per Revolution, in.	Length of Cut, in.
1	....	Stock Stop	....	....	....	......
2	....	Point End	720	2000	Hand Feed	⅜
3	....	Turn 0.750 in. diam.	720	2000	0.015	$2\frac{15}{16}$
4	....	Turn 1.000 in. diam.	720	2000	0.022	3
5	....	Center Drill End	....	2000	Hand Feed	....
6	....	Thread ¾—10 NC	400	2000	Hand Feed	⅝
....	Rear	Neck (2) & Form (Revolving Center)	720	2000	Hand Feed	$\frac{3}{16}$
....	Front	Cut Off	720	2000	0.011	⅝

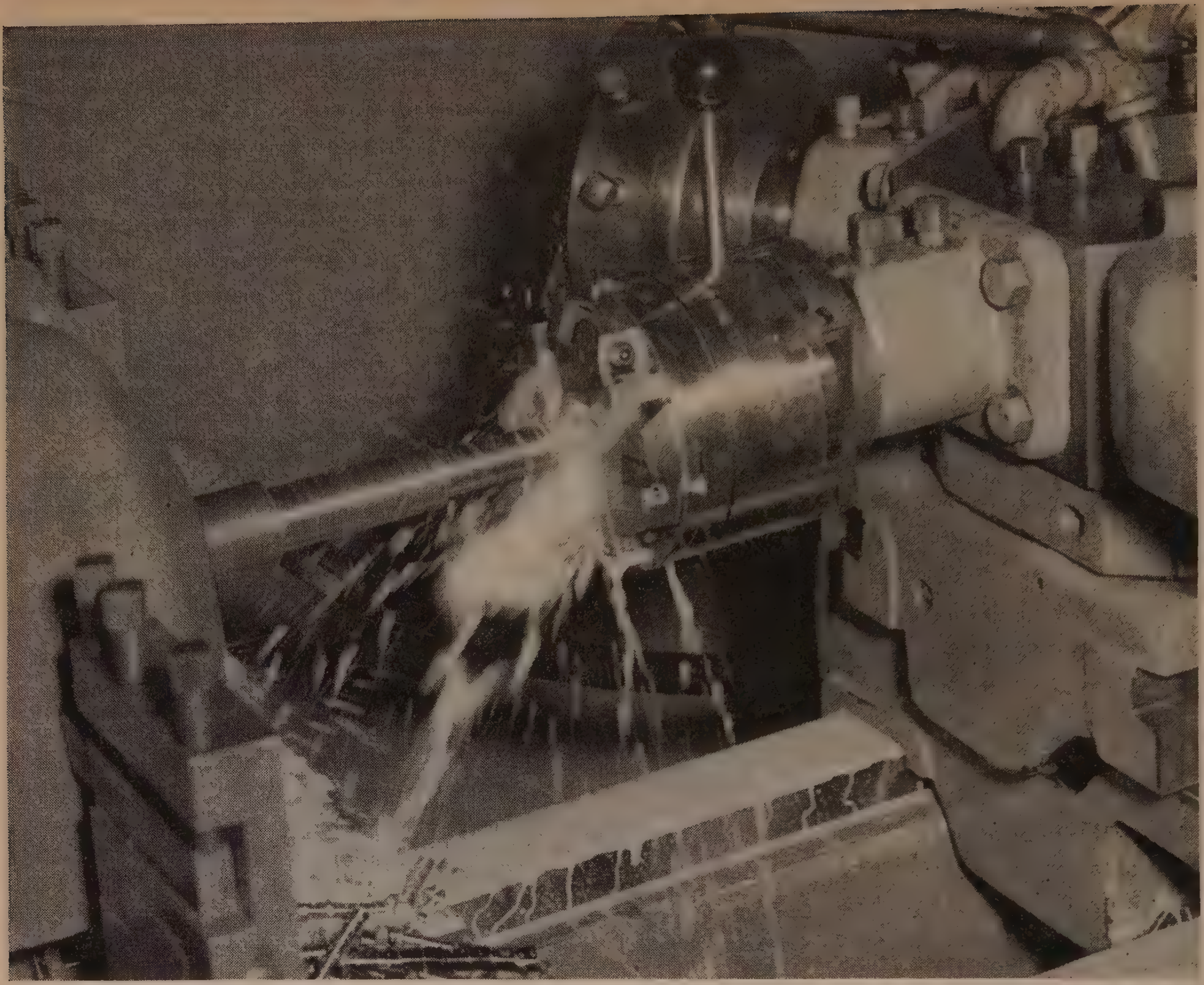

FIG. 2—Standard, stock model tangent die heads are used, with no special structural features, in using carbide tipped chasers.

set up on screw machines and automatics in a large manufacturing plant. Results to date are encouraging on steel applications and especially on such abrasive materials as hard rubber, fiber, etc., which have a rapid dulling effect on ordinary chasers. Some recent illustrations of the use of these chasers include threading of fiber tubing, copper, and cold-rolled steel. A ¾-16 NF thread, 1¾ in. long, was required on each end of fiber tubing. Using high speed steel chasers at 270 rpm, production was 100 pieces per sharpening, and down time and tool expense high. With carbide tipped chasers at 1420 rpm (210 sfpm), production was approximately 10,000 pieces per sharpening with considerable savings in tools and down time. A ⅜-16 NC thread on copper bar stock was machined, the thread length being 1¾ in. at each end of the bar. Using high speed steel chasers at 270 rpm, production was 500 pieces per grind. With carbide tipped chasers at 1620 rpm (160 sfpm) production was approximately 3000 pieces per sharpening.

On cold-rolled steel, a ½-13 NC thread 2 in. long was required. High speed steel chasers were operated at 300 rpm (39 sfpm). Carbide tipped chasers permitted an increased speed of 1600 rpm (210 sfpm).

Carbide chasers are not to be considered the solution to every threading problem. They must be suitably applied and correctly handled. Their full effectiveness is only possible on machines incorporating sufficient speeds, power and rigidity to handle carbide tooling efficiently. Because of these factors and others such as machinability, adequate clearance near shoulders, etc., it is necessary to analyze each proposed application in order to screen out the relatively high number of jobs with unsuitable conditions.

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Properties of Nodular Cast Iron

—*a Bibliography*

DEVELOPMENT of a method for producing nodular graphite iron without the necessity of heat treatment, as in the malleable cast iron process, has stirred considerable foundry interest both in this country and abroad, where the technique was developed under the sponsorship of the British Cast Iron Research Assn.

These irons, commonly referred to as nodular irons or nodulite, are unalloyed in the general sense, yet are reported to have physical properties substantially above the normal unalloyed gray iron.

A survey of the literature, assembled in the July, 1948, Bulletin of BCIRA, reports the following references:

(1) Graphite formation in cast irons and in nickel-carbon and cobalt-carbon alloys was reported by Morrogh and Williams in the British publication, Journal of the Iron & Steel Institute, v. 158, March, 1947.

(2) The fundamental work leading to the discovery of methods for achieving nodular structures in the as-cast state is described in the paper "Graphite Formation in Grey Cast Iron," Morrogh and Williams, Institute of British Foundrymen, Annual Meeting, June, 1947, Paper 875. The paper (a) reviews existing theories on graphite formation processes, (b) discusses those features of graphite formation in cast irons which still require explanation, and (c) describes the possibility of obtaining nodular structures in the as-cast metal.

(3) Pearce gives an explanation in "The Formation of Graphite in Cast Iron," J. of Research & Development, BCIRA, v. 2, February, 1948, of the process of decomposition of solid cementite on the basis of observed phenomena. The breakdown of cementite by annealing is studied, the influence of sulfur and its effect on nodular structure is examined, and the theories suggested to explain the growth of the graphite nodules are discussed. The influence of cooling, the relationship between nodule number and rate of graphitization, and other factors are also studied.

(4) "Nodular Cast Irons," by Morrogh, J. of Research & Development, BCIRA, v. 2, February, 1948, gives a detailed account of the work carried out to produce as-cast nodular structures in cast iron. The element selected as a desulfurizing agent to produce such structure was cerium. Addition proportions of this element and the appropriate molten cast iron compositions are discussed, and notes on the effect of constituents and special alloying elements are included. Improvement in structure and mechanical properties by addition of a graphitizing inoculant subsequent to the cerium addition is reported.

(5) Influence of sulfur in the process is thoroughly discussed in "Production of Nodular Graphite Structures in Cast Iron," Morrogh and Williams, J. of the Iron & Steel Institute, v. 158, March, 1948, and the general composition requirements for successful treatment are given. Mechanism of solidification is described, and hypereutectic graphite is shown to form in the liquid with a spherulitic structure. The mechanical properties obtainable are discussed.

(6) Pearce gives a brief account of the method for producing nodular structures and describes the mechanical properties to be expected from the material in "A New Cast Iron; The Nodular Graphite Structure," a paper read at a meeting of the Chemical Engineering Group, Society of Chemical Industry, April 6, 1948.

(7) The influence of graphite in cast iron and the improvements in mechanical strength to be obtained when the graphite is in nodular form are briefly discussed in "Recent Technical Developments in the Production of Iron Castings," Dickinson, Foundry Trade Journal, v. 84, April, 1948.

(8) Morrogh describes the development and means of producing nodular cast iron and discusses the inoculation or double-treatment technique in "Nodular Graphite Structures Produced in Gray Cast Iron," American Foundrymen's Assn., Annual Meeting, May, 1948, Preprint 48-46.

(9) Further data on mechanical properties of nodulite, based on test bars in which the material was treated with cerium only as well as with both cerium and a graphitizing inoculant (SMZ alloy), are given in "Nodular Cast Irons, Their Production and Properties," by Morrogh and Grant, Institute of British Foundrymen, Annual Meeting, June, 1948, Paper 889. This paper concludes that nodular irons are particularly suitable for applications demanding high strength and shock resistance together with good machinability. By heat treatment or the use of special alloying elements, mechanical properties of the material are said to be raised to a very high level.

Electroplating Alloys From

TWO or more metals may be deposited from an electroplating bath only under special conditions. If two soluble metal salts of different metals are taken at random, it is unlikely that the metal ions will codeposit on application of electric current across the electrolyte. Experimentally it is true that an alloy deposit would eventually be obtained by trying enough combinations of metal salts; but the deposit would be of commercial value only if it were sound and if the plating conditions were practicable from the standpoints of control and reproduction.

The most successful alloy plating baths have been those that are similar to single metal baths, with the addition of a second soluble metal. This is largely true because the single metals are deposited commercially with limited electrolyte conditions.

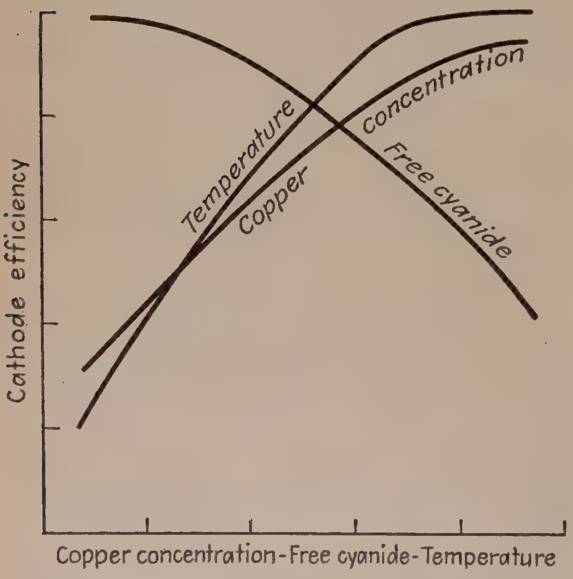


FIG. 1—Effects of variables in a copper cyanide bath. If operated at high pH and temperature and at low free cyanide concentration, cathode efficiency will be 100 pct.

Due to limiting bath conditions for both single metal and alloy deposits, the cyanide baths have proved applicable to a wide range of alloy compositions. Copper, silver, zinc, cadmium and gold are commonly plated from cyanide baths. The alkaline tin bath, which is similar in many ways to a cyanide bath, is also popular, and from these metals many alloy combinations have been produced.

A prime requirement of an alloy bath is that the metals have a similar tendency to plate; that is, nearly equal deposition potentials should exist during codeposition. This effect is seen in acid baths where copper has a strong tendency to plate compared with zinc. If a small amount of copper is added to an acid zinc bath, the copper will deposit as fast as it reaches the cathode. Codeposition will be limited by the rate of diffusion of copper ions across the cathode film. In fact, copper will deposit chemically on the zinc anode even though the current is anodically dissolving zinc at the time, and when a large amount of copper is present in the acid zinc bath, copper will deposit exclusively.

A noble metal, one that has a greater tendency to plate in competition with a second metal in an alloy bath, will increase in the deposit with decrease in current density, increase in agitation or increase in temperature. These are the changes in conditions that favor contact of the noble metal ions with the cathode by diffusion across the cathode film. If the deposition potential of each of two metal salts is the same for relatively high concentrations of each of the salts, the composition of the deposit will not be greatly affected by small changes in plating conditions. Nickel-cobalt alloys deposited from acid baths are a good example.

Cyanide Baths

By J. B. MOHLER
New Castle, Pa.

In the continual search for more durable, more attractive and higher quality commercial surfaces, considerable effort has been devoted to the development of processes for electroplating alloys. In such work cyanide baths have proved especially well suited to a wide range of alloy depositions. This article reviews the theory and practice of plating brass, bronze and other alloys from the cyanide and alkaline-cyanide baths.

In cyanide and alkaline baths, metal complexes are formed to reduce the quantities of metal ions to very small concentrations. As a result, the deposition potentials are greatly changed in comparison with acid baths. Where copper will have a deposition potential of about +0.3 v in an acid bath, it will have a deposition potential of approximately −1.0 v in a cyandie bath. Zinc will have a deposition potential of the order of −0.6 v in an acid bath and −1.0 v in a cyanide bath. These voltages are approximate and can be considerably altered by a change in bath composition. However, where copper and zinc codeposit from an acid bath only under limited and sensitive

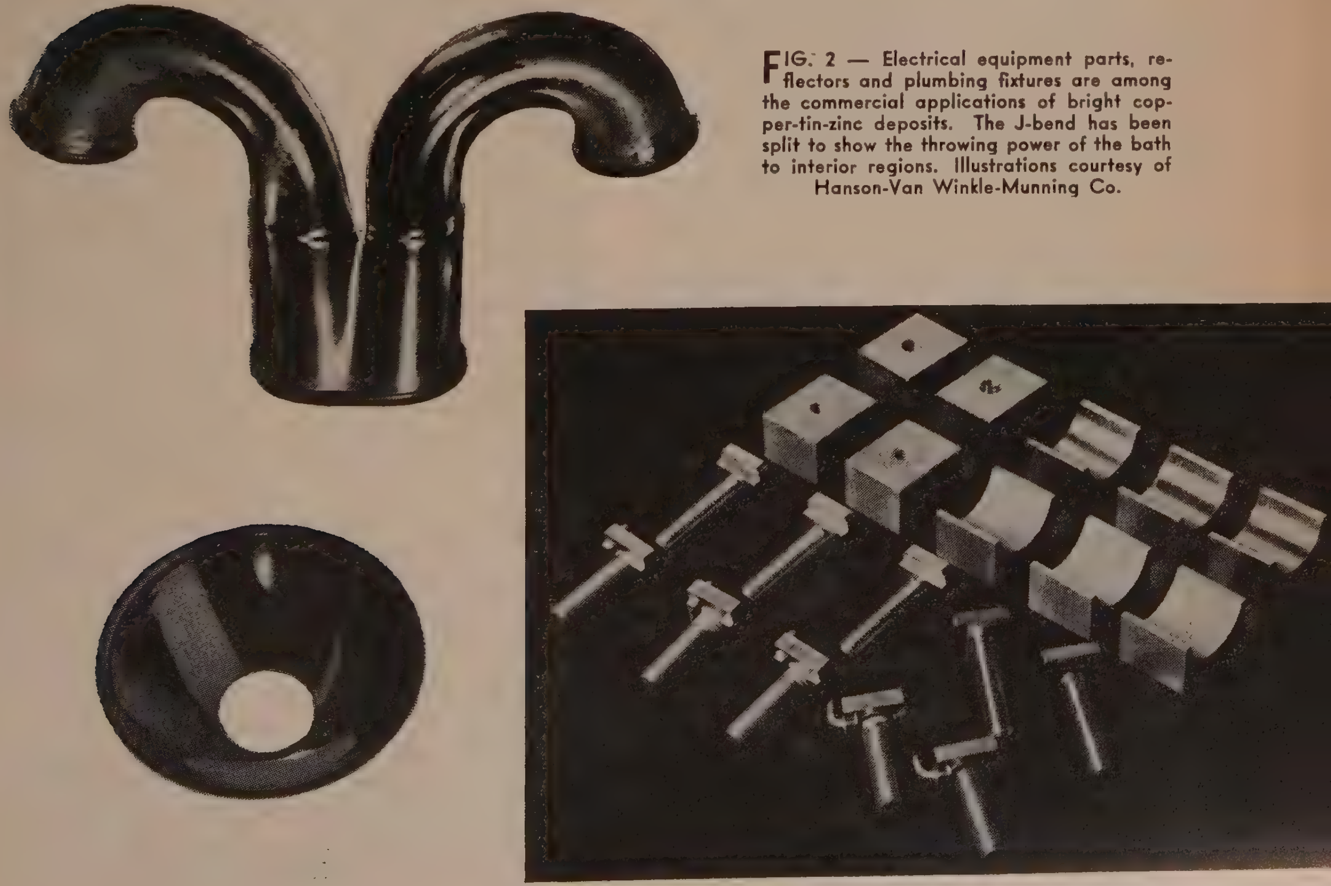


FIG. 2 — Electrical equipment parts, reflectors and plumbing fixtures are among the commercial applications of bright copper-tin-zinc deposits. The J-bend has been split to show the throwing power of the bath to interior regions. Illustrations courtesy of Hanson-Van Winkle-Munning Co.

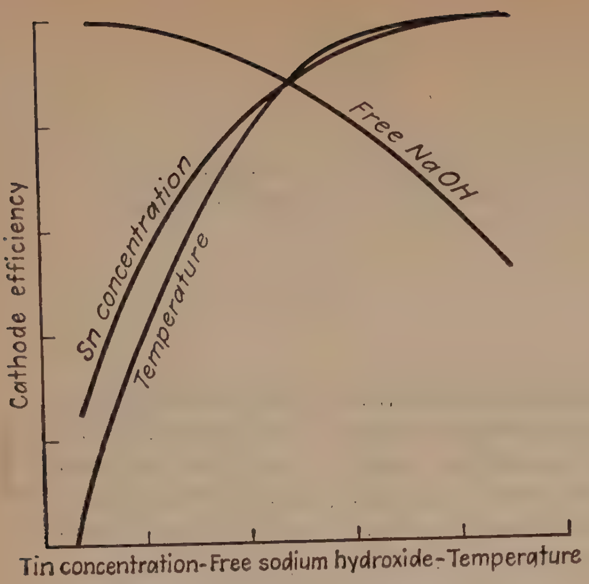


FIG. 3—Characteristics of the alkaline tin bath. Anodes must be maintained in a polarized state.

conditions, codeposition from a cyanide bath is possible under easily controlled conditions.

Any of the common cyanide baths can be operated under conditions such that hydrogen will be evolved during metal deposition. This means that hydrogen evolution, or cathode efficiency, can be used as a measure of the tendency of the metal to deposit, and that the metal is depositing at the deposition potential of hydrogen under alkaline conditions.

The tendency of copper to deposit from a cyanide bath can be followed by the addition of cyanide. As cyanide is added, the copper ion concentration is reduced and, if the free cyanide is sufficiently high, copper will not deposit. The tendency of the hydrogen to deposit will be little affected since additions of cyanide to an alkaline solution will not greatly alter the hydrogen ion concentration. On the other hand, if a copper cyanide bath is operated at high pH, high temperature and low free cyanide concentration, the cathode efficiency will be 100 pct, as shown in fig. 1.

A silver cyanide bath is not greatly affected by increase in free cyanide content. High free cyanide alters the quality of the deposit, but will not affect the cathode efficiency which can be lowered only by a great increase in current density or a decrease in concentration. And either of these effects is offset by increase in agitation.

The characteristics of the cyanide copper bath and the cyanide silver bath lead to the conclusion that a silver-copper alloy would be possible with low silver concentration and high free cyanide, but that bath control would be difficult.

Other combinations of the alkaline-cyanide baths have proved more practicable—particularly combinations of copper, tin and zinc—and are showing promise as alloy plating mediums because of the range of deposits that are possible. Copper, zinc, cadmium, silver, gold and indium are preferably plated from cyanide baths. Tin can be deposited from an alkaline bath and small amounts of lead can be codeposited under the same conditions. The major limitation on alloy combinations lies in the inherent compatibility of the metal combinations rather than in electrochemical restrictions. For instance, it has been shown that lead is of limited solubility when codeposited with copper,[1] and that a similar result is obtained when lead is codeposited with silver.[2] On the other hand, copper, tin and zinc can be deposited in almost any proportion, and combinations of these three metals offer possibilities for a great range of properties in hardness, color and corrosion resistance. Some commercial applications of these deposits are shown in fig. 2.

The future of alloy deposits depends on experimentation with a range of alloys to determine how the properties may be used to advantage as commercial surfaces. But, before considering the range of alloys that can be produced, it will be well to consider what alloy plating has shown thus far.

First, two metals tend to form solid solutions, intermetallic compounds, or to be mutually insoluble depending on the combination of metals rather than the method of preparation. If the atomic diameters are favorable to fit into the parent lattice, alloys will form. The degree of solubility may vary from thermal methods, since it is affected by stress and crystal size, but metals that are not soluble in the solid state will not alloy when plated. Deposition in alternate bands of the two metals may occur, however such deposits are usually weak and do not have alloy properties.

Plated alloys often have the characteristics of cold-worked cast alloys due to small crystal size. Thus, the solubility of the minor metal may be higher than in castings, but will be reduced to the same amount by full annealing.

The second important point is that the commercially successful alloy baths are modifications of the common plating baths. Metallurgy and electroplating are both important for the development of alloy baths as the metals involved must be metallurgically compatible and must be deposited from a bath that can be continuously controlled.

The Alloy Baths

Of the great range of alloys that can be produced, combinations of copper, tin and zinc from alkaline-cyanide baths have been commercially successful[4] and are worthy of special note. The familiar colors of bronze and brass can be produced by codepositing tin and zinc with copper. Very hard white deposits of speculum metal have been obtained by depositing copper-tin alloys containing 55 to 60 pct Cu.[3] Tin-zinc alloys have been deposited that are said to have the protective value of zinc as an overlay for steel, and to provide the corrosion resistance of tin.[5]

Further combinations of these metals will depend on the need for deposits to meet color requirements, abrasion resistance, corrosion resistance or various engineering applications. An example of one engineering application is the use of brass deposits as an intermediate layer in bonding rubber to steel.

Characteristics of Cyanide Baths

Alloy plating from the alkaline-cyanide baths should be consistent with the principles of operation for single metal baths. For instance, the copper plating rate from a cyanide bath will depend on the free cyanide content whether another metal is present or not, and by addition of cyanide, the copper plating rate can be reduced. The copper cyanide bath is affected by the following factors (fig. 1); (1) Increase in free cyanide decreases the copper plating rate and decreases anode polarization; (2) increase in temperature increases the copper plating rate and decreases anode polarization; (3) increases in free cyanide, pH and temperature increase bath decomposition.

These conditions cover the fundamental requirements. Secondary considerations involve the concentration of metal salt and the use of additives such as Rochelle salt.

The following factors are important for the operation of a cyanide zinc bath: (1) Increase in free cyanide will decrease the zinc plating rate; (2) increase in pH will increase anode polarization and decrease the zinc plating rate, and (3) increase in temperature will increase the zinc plating rate and lower anode polarization.

From the requirements for copper plating and for zinc plating, it can be seen that an increase in caustic can be used as a control factor in an alloy bath containing copper and zinc. The effects of free cyanide and temperature are not so easy to predict since each of the baths responds in a similar fashion to these variables. However, each responds to a different degree and the composition of the deposit will be affected by a change in any variable. Also, cathode efficiency will increase with increase in temperature.

The successful alloy bath will depend on a selection of conditions that will produce a satisfactory plating rate; that will not cause a large change in the relative plating rates of the metals for small changes in bath conditions; and that will enable bath control and continuous operation.

In the alkaline tin bath, the following characteristics, shown in fig. 3, determine the conditions for bath operation: (1) Increase in temperature increases the tin plating rate; (2) increase in caustic decreases the tin plating rate; (3) high temperature and low pH promote bath decomposition with the formation of insoluble tin compounds; (4) high temperature and high pH promote the decomposition of sodium hydroxide to form sodium carbonate, and (5) anodes must be maintained in a polarized state.

In plating tin with another metal, the principal control variable is temperature. At room temperature, tin will not deposit; however, cathode efficiency increases markedly with increase in temperature.

From the requirements for the component baths, it can be seen that limiting conditions are imposed on the alloy baths by each of the metals involved. In the case of a tin alloy, the bath must be heated; but at high temperatures, excessive amounts of caustic or cyanide cannot be used for control purposes since the chemicals will decompose. Also, a tin alloy bath to deposit high tin requires that either tin or high tin alloy anodes be maintained in a polarized condition.

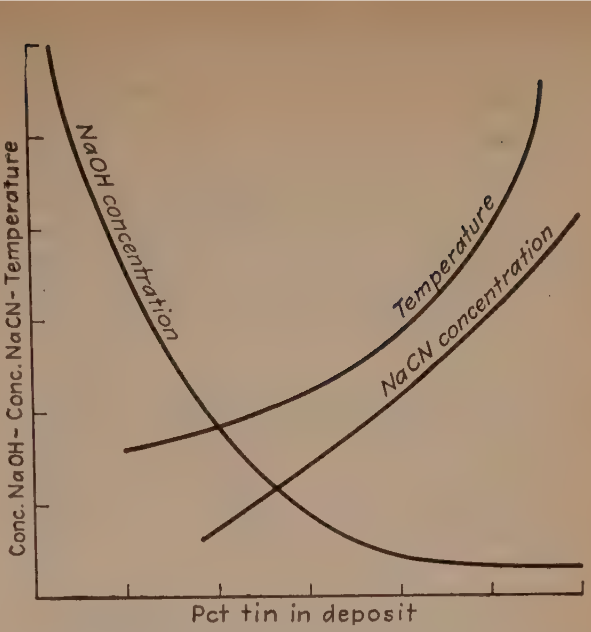


FIG. 4—Effects on alloy composition of the primary variables of a bronze bath.

The rate of silver plating from cyanide solutions is practically independent of cyanide concentration. Gold behaves similarly. The high efficiency copper cyanide baths are operated under conditions of high metal content, high temperature, low free cyanide and high pH to obtain a rapid plating rate, and if potassium salts are used in place of sodium salts, greater bath stability and higher cathode efficiencies are possible so long as the copper and tin contents are low.

The characteristics of the high efficiency copper bath warn that adhesion may not be obtained at high cathode efficiency. If the efficiency is to be 100 pct, activation of the steel by a cyanide strike bath may be required before plating.

Alloy baths require closer control than single metal baths since deposits must be held within a range by analysis or color as well as by quality. A knowledge of the effect of variables is essential to such control. Fig. 4 shows graphically the characteristics of a bronze bath. It is seen that the tin in the deposit increases with increase in temperature, with increase in sodium cyanide and with decrease in caustic. This is in keeping with the behavior of the component baths, but for actual definition of chemical limits it is helpful to determine such curves in the desired composition range for the deposit. In some baths, increase in current density may cause an increase in the tin plating rate and, in others, an increase in the copper plating rate, depending on the concentrations of cyanide and hydroxide and whether sodium or potassium salts are used.

The alloy baths are at times easier to control for quality since the presence of a second metal may act as an addition agent. The cobalt-nickel bath is a good example of this. Also, tin in the bronze bath has a similar effect since it is much easier to obtain heavy bronze deposits than heavy copper deposits. When metal is deposited in small amounts, it is not essential to use alloy anodes since occasional addition of metal salts will not upset bath control.

Alloy anodes are generally desirable, but cannot always be used as immersion plating on the anodes may interfere with control. In such a case, separate circuits can be used to the anodes of each of the metals, or a regeneration system in a separate tank can be used to maintain metal concentration.

The literature on copper-zinc alloy plating is extensive. Interest was stimulated because of the wide applications for color plating and because of the suitability of the deposits in bonding rubber to steel. Also X-ray data has been conclusive in showing the deposits to exist in the same phases as alloys obtained by thermal methods. Processes have been reported for plating at relatively high current densities.[6]

A considerable amount of work has also been done on bronze plating and baths have been reported that will deposit high,[7] medium,[3] or low[8] percentages of copper. Fig. 4 shows the effects of the primary variables of a bronze bath on the alloy composition.

A tin-copper zinc alloy bath has been applied in production using alloy anodes to produce hard, blue-white, bright deposits.[4] The bath is operated with low total metal content at a cathode efficiency of about 35 pct. Since the metal content is low, the alloy anodes help control the composition of the plate by supplying metal in the proportion in which it is deposited.

REFERENCES

[1] Meyer and Phillips, Trans. Electrochem. Soc., 73, 377 (1938)

[2] Mathers and Johnson, Trans. Electrochem. Soc., 74, 229 (1938)

[3] Int. Tin Research Dev. Council, Fourth General Report, Pub. 95 (1939)

[4] Diggin and Jernstedt, 32nd Annual Conference American Electroplaters' Soc. (1944).

[5] Angles, J. of Electrodepositors Tech. Soc., 21, 45 (1946).

[6] Graham, 35th Annual Conference American Electroplaters' Soc. (1948).

[7] British Pat. 323,765 U. S. Pat. 1,970,549.

[8] U. S. Pat. 2,085,543.

Broaching Pinion Cage Slots

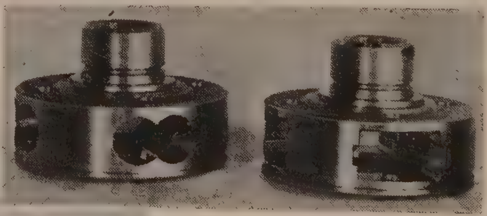
THE problem of how to rapidly machine a number of large slots in pinion cages, holding the faces of the slot to within 0.001 in. of parallel with the faces of the pinion cages, was solved by an interesting application of broaching developed by Colonial Broach Co., Detroit.

To broach the four required slots in the pinion cages, the slots are first rough bored as shown in fig. 1, left. The finishing operations are performed on two parts at a time in two strokes of the Colonial Universal Horizontal 15-ton broaching machine, using two broaches, as shown in fig. 2.

The two rectangularly shaped broaches on this machine are identical. They are guided on both sides of the work during the entire cut. The sequence of cutting operations by which different sections of the broach rough out and then finish each slot is shown in fig. 3. The recesses in the ends of the slot are used to guide the broach in its final cut of finishing the long faces of the slot. By cutting the opposite sides of the slot simultaneously, the cutting pressure is equalized.

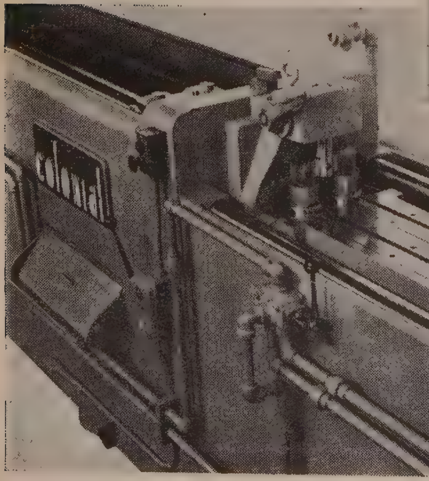
The ability to hold to high accuracy while rapidly removing metal to finished size is the result of the manner in which the broach is guided. One broach on the machine cuts two opposite slots in the part. The part is then rotated 90° and the other two slots are cut by the second broach. Thus, a complete part is produced at every cycle of the machine.

Clamping is done hydraulically with the cylinder mounted above the fixture. The cylinder is not shown in the photograph.



ABOVE

FIG. 1—First step in machining slots in the pinion cages is to rough bore them, as shown on the left. Then the large slots, shown at right, are cut to within 0.001 in. for parallel with the faces of the pinion cage in one operation.

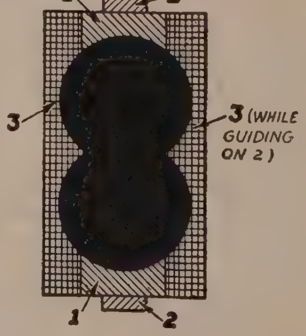


LEFT

FIG. 2—Broaching the pinion cage slots is performed on this Colonial Universal horizontal 15-ton broaching machine.

BELOW

FIG. 3—Sketch shows sequence of material removal by which different sections of the broach rough out and finish the slot.



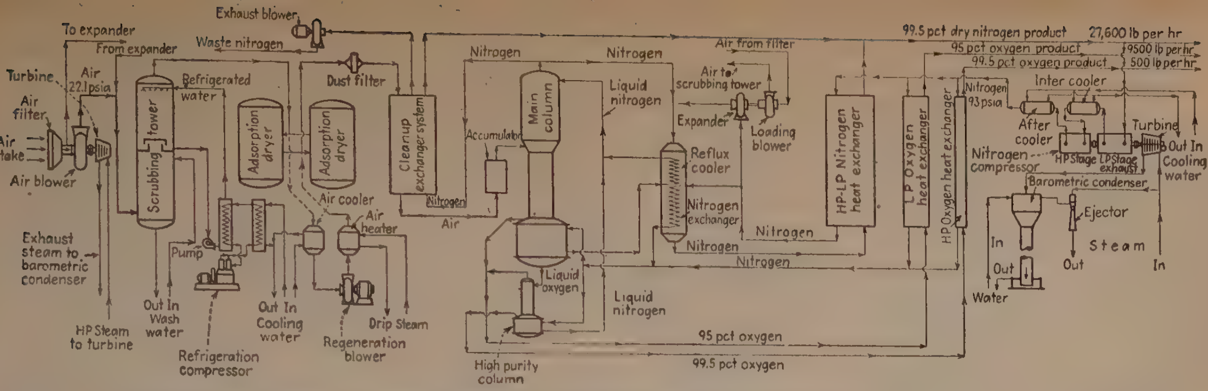

Exhaust blower
To expander
From expander
Waste nitrogen
Turbine
Air 22.1 psia
Air filter
Air intake
Air blower
Refrigerated water
Scrubbing tower
Adsorption dryer
Adsorption dryer
Dust filter
Cleanup exchanger system
Nitrogen
Nitrogen
Nitrogen
Air
Accumulator
Main column
Liquid nitrogen
Air from filter
Air to scrubbing tower
Expander
Loading blower
Reflux cooler
Nitrogen exchanger
Nitrogen
Nitrogen
Nitrogen
HP-LP Nitrogen heat exchanger
LP Oxygen heat exchanger
HP Oxygen heat exchanger
99.5 pct dry nitrogen product
27,600 lb per hr
95 pct oxygen product
9500 lb per hr
99.5 pct oxygen product
500 lb per hr
Nitrogen 93 psia
Inter cooler
After cooler
Turbine
Nitrogen compressor
HP Stage
LP Stage exhaust
Out In
Cooling water
Barometric condenser
Ejector
In
Out
Water
Steam
Out
In
Air cooler
Air heater
Exhaust steam to barometric condenser
Pump
Out In
Wash water
Out In
Cooling water
Drip Steam
HP Steam to turbine
Refrigeration compressor
Regeneration blower
Liquid oxygen
Liquid nitrogen
High purity column
95 pct oxygen
99.5 pct oxygen

FIG. 1—Simplified flow diagram of oxygen plant. This unit was designed to produce 114 tons per day of 95 pct oxygen and 6 tons per day of 99.5 pct oxygen.

Oxygen Generating System Has Flexibility

OXYGEN producing systems for steelmaking, welding and other plant operations have been evolving rapidly. The latest entry in the field is a system, fig. 1, designed by the Elliott Co., Jeannette, Pa., which will produce oxygen of any purity, can simultaneously make both high and low purity product and does not need to be shut down periodically for deriming.

The cycle involves an atmospheric pressure, air distillation system combined with a nitrogen liquefaction and refrigeration system. Separate control over the making of the nitrogen reflux and the supply of refrigeration provides a wide latitude of operational flexibility and enables operation at reduced loads without loss in efficiency.

Recovery of oxygen from the air charged to the system is said to be over 97 pct. The exhaust nitrogen is over 99.5 pct pure and may be used for most chemical syntheses without further purification.

The flow diagram in fig. 1 shows a system designed for production of approximately 114 tons per day of 95 pct oxygen and 6 tons per day of high purity (99.5 pct) oxygen. The supplemental high purity product is made without increasing the horsepower per total unit of oxygen produced. In many instances, the user can obtain the full requirement of high purity oxygen at the same cost per ton as the low purity content. In addition, 332 tons of dry nitrogen are obtained.

Effectiveness of impurity removal is said by Elliott engineers to be better than in the standard Linde-Frankl plants since the air leaving the cleanup heat exchanger is at approximately 18 psia and —310°F in contrast to 90 psia and —270°F in a Linde-Frankl system. The vapor pressures of carbon dioxide and other impurities drop off rapidly in this range with the result that the 40°F difference in temperature and the considerably lower pressure accomplish the freezing out of impurities more efficiently.

Lower operating pressure also permits the use of low pressure equipment with considerable savings in unit cost. Simple butterfly valves, designed for operation slightly above atmospheric pressure and with a few pounds differential, can be used rather than more expensive switching valves designed for relatively high pressures and differentials of 60 psi or more.

Design is arranged so that through a combination of automatic valves on a fixed time cycle, one heat exchanger bank at a time is switched from service for purging of deposited impurities by a reverse direction flow of product dry nitrogen. Experimental operation of a pilot plant indicates that approximately 10 pct of the effluent nitrogen is required for this purpose. The gas is sucked through the exchanger being cleaned by an exhaust blower, and the alternating cycle permits continuous operation without shutdown.

Standardized sections for the heat exchangers, fig. 2, have been developed to permit mass production techniques for plants of any capacity. The heat exchangers are thin copper fins furnace bonded between brass plates and manifolded so that one fluid flows in one direction through every alternate passage and the other fluid flows in the opposite direction through the intermediate passages. This surface arrangement provides over 300 sq ft of effective surface per cu ft of heat exchanger volume.

An accumulator is provided in the air stream between the cleanup heat exchanger system and the main column to balance out the pressure and temperature fluctuations which occur when heat exchangers are switched. In the Elliott system, the differential pressure is only a few pounds gage, so the surge is very slight.

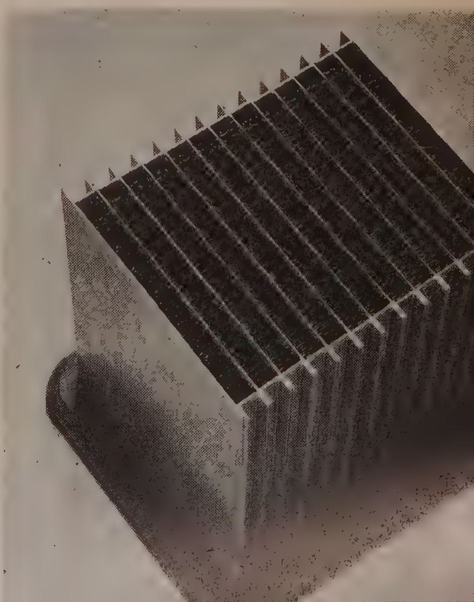


FIG. 2 — Section model of gas-to-gas heat exchanger.

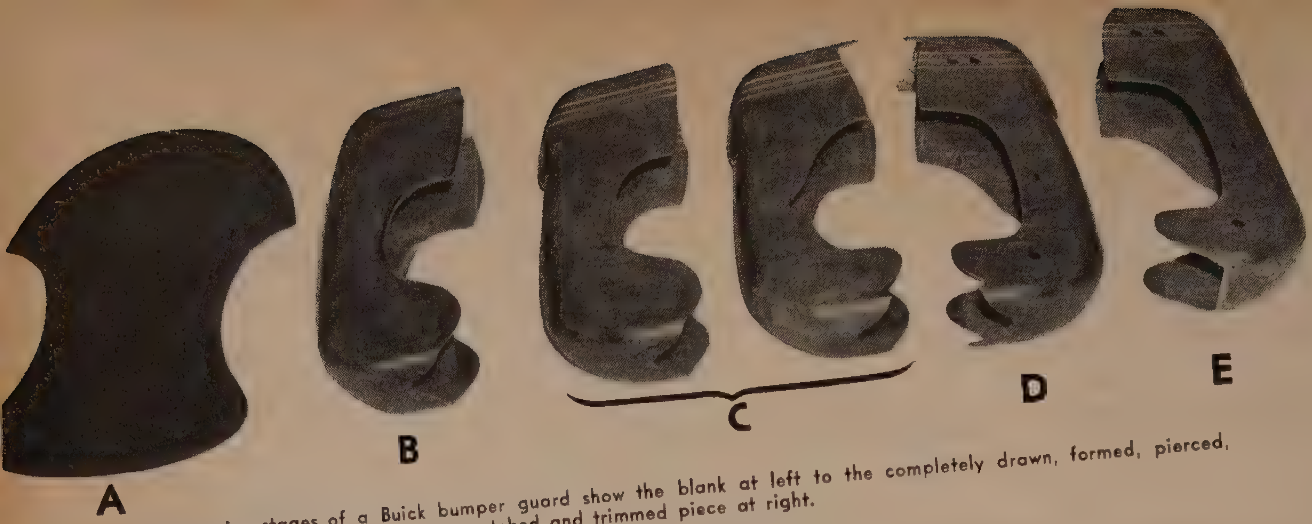


FIG. 1—Successive stages of a Buick bumper guard show the blank at left to the completely drawn, formed, pierced, notched and trimmed piece at right.

Stamping

○ ○ ○

By HERBERT CHASE
New York

○ ○ ○

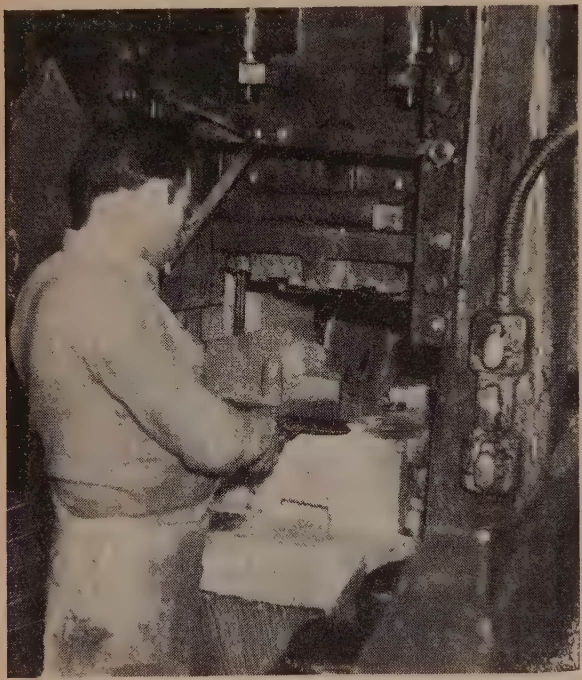
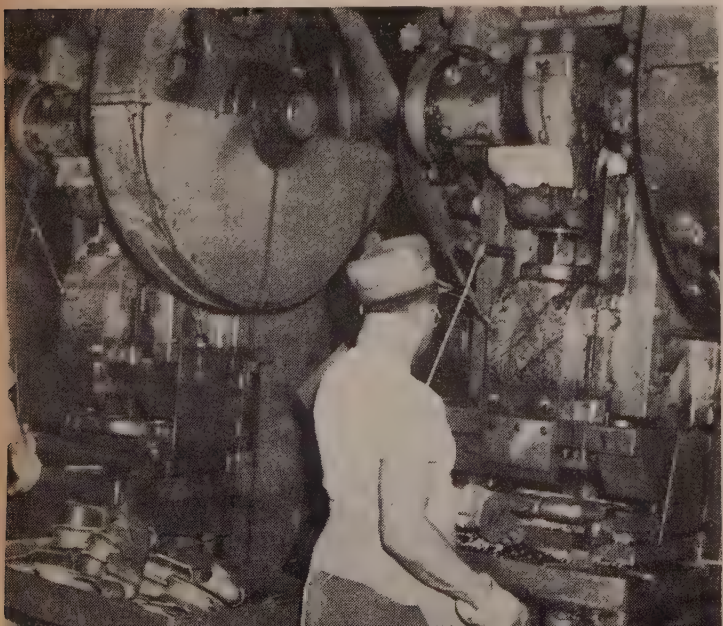


FIG. 2—A double-acting press draws the blanks which are coated with draw compound. In putting the blank in place, the piece previously drawn is pushed into a chute, down which it slides to the next press.

FIG. 3—After drawing and forming, guards are washed and directed to these presses that notch, trim, and pierce the side faces.



AUTOMOBILE bumper guards are produced at a rapid rate at Brown-Lipe-Chapin Div., General Motors Corp., Syracuse, N. Y. Typical of such parts is the Buick rear bumper guard shown in several stages of production in fig. 1.

Guards are blanked from cold-rolled deep drawing sheet stock 3/32 in. thick, preliminary to the first drawing operation. Blanks are dip-coated with No. 47 Chandler draw compound before they reach the double-acting drawing press shown in fig. 2. There, blanks are hand-fed with tongs.

The draw cycle required about 5 sec and as the drawn piece is ejected from the die, it is pushed into a chute by the next blank as the press operator puts the second blank into the die. Drawing forms the piece to the shape shown in fig. 1B, after which the piece is immediately redrawn in a second die which forms the ribs and paint recesses, as shown in fig. 1C.

This redrawing is done in a single-acting press and, as soon as the piece is ejected, the the press operator places it in a channel of a short washer through which it is pushed as new pieces are fed into this machine. A hot alkaline spray is applied in this washer to remove draw compound before further processing.

At the end of the washer, pieces pass to the next press, the first in a row of three of which two are shown in fig. 3. In the two presses shown, flash is sheared from side faces, notching

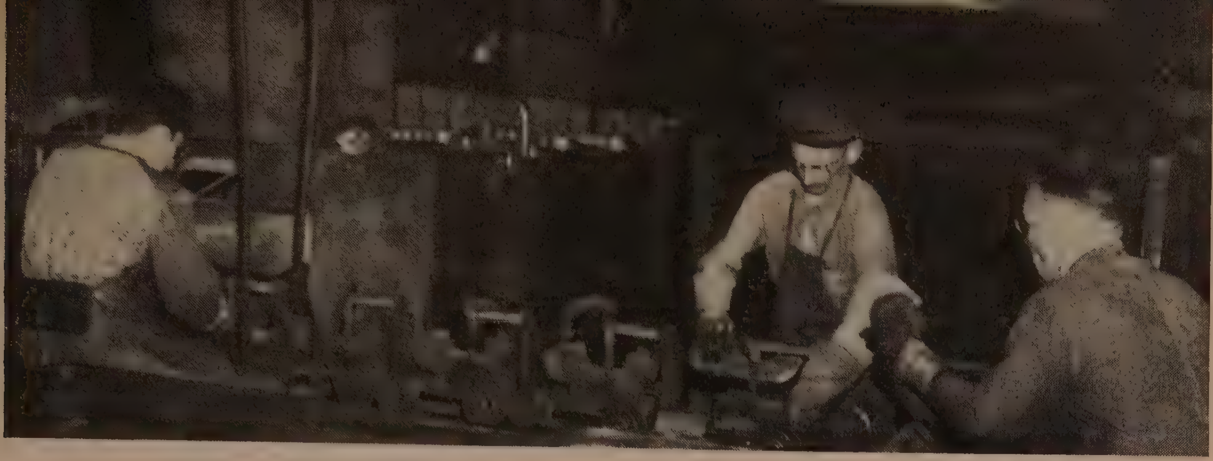


FIG. 4—A stud plate is arc welded to the inside of the bumper guards. Parts are loaded in the wheeled fixtures on a conveyer that carries them through two arcwelding booths at left. The man at extreme right unloads welded parts and inspects welds.

○ ○ ○

Buick Bumper Guards

Four men operate five presses that draw, form and trim automobile bumper guards. Studs are then welded to the inside of the guard in a fast moving, wheeled fixture arrangement. The production line setup for this part is described in this article.

is done and holes are pierced, after which the pieces appear as shown in fig. 1D. Operators of these presses lay the pieces in the metal bins shown in fig. 3, convenient for the operator of the next press.

In the final press operations, flash is trimmed from the ends of the piece after which it has the shape shown in fig. 1E. As the operations in the last three presses are faster than the draw operations, two operators handle the work through three presses, shifting about as necessary to keep the work moving. Bins between presses have sufficient capacity to hold small tanks of parts that accumulate especially next to the press at which, for the moment, no operator is engaged.

Thus, with a total of two drawing and three supplementary presses, a crew of four men keep production moving at a rapid rate. At the end of this line, parts are placed in wire baskets on a chain conveyer that carries the parts through an automatic washer that cleans first in a soluble oil mixture and then in a K-7 Pennsalt solution maintained at boiling temperature.

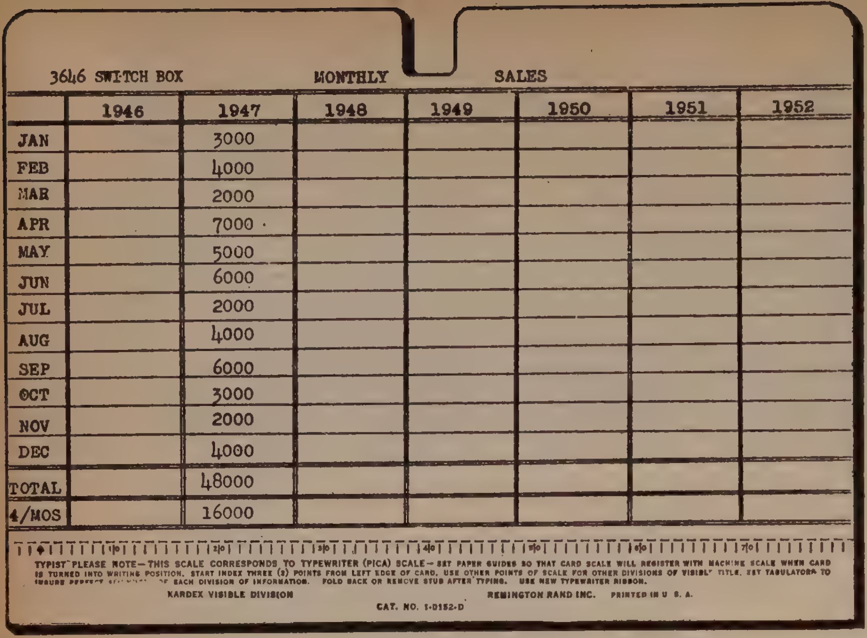
Washing removes grease and other foreign matter and makes parts ready for the subsequent welding in of a fastening stud attached to a plate. Washed parts are loaded in tote boxes for delivery to the welding setup, a portion of which is shown in fig. 4.

To expedite welding, a conveyer is equipped with four-wheeled fixtures each having a U-shape hold-down device that is lifted against a spring and swung to one side as the parts are loaded and unloaded. Bumper guards to be welded fit the fixtures, and the stud, already staked to an oblong plate, is located by notches that fit suitable projections.

The two parts to be welded are loaded by one man who takes them from tote boxes spotted close at hand and sets the parts in correct relative position with the U-shaped clamp holding them in place. Wheeled fixtures move continuously along a track that carries them through two welding booths at each of which a welder makes two arc welds at two corners of the plate. A welder is located on either side of the conveyer and welds the two corners of the plate farthest from him, as these are in the most convenient position.

After the welds are completed, fixtures continue around the loop below the welding level, back to the unloading and reloading positions. During this transit, the welds cool and the assembly is ready for removal from the fixture. This unloading is done just as the fixture passes the end of the loop, shown at right in fig. 4 and is accomplished by an operator who also inspects the welds before he places the assembly in a tote box for removal to the finishing department.

Production



3646 SWITCH BOX MONTHLY SALES

	1946	1947	1948	1949	1950	1951	1952
JAN		3000					
FEB		4000					
MAR		2000					
APR		7000					
MAY		5000					
JUN		6000					
JUL		2000					
AUG		4000					
SEP		6000					
OCT		3000					
NOV		2000					
DEC		4000					
TOTAL		48000					
4/MOS		16000					

TYPIST PLEASE NOTE—THIS SCALE CORRESPONDS TO TYPEWRITER (PICA) SCALE—SET PAPER GUIDES SO THAT CARD SCALE WILL REGISTER WITH MACHINE SCALE WHEN CARD IS TURNED INTO WRITING POSITION. START INDEX THREE (3) POINTS FROM LEFT EDGE OF CARD. USE OTHER POINTS OF SCALE FOR OTHER DIVISIONS OF VISIBLE TITLE. SET TABULATORS TO INSURE PERFECT [illegible] OF EACH DIVISION OF INFORMATION. FOLD BACK OR REMOVE STUB AFTER TYPING. USE NEW TYPEWRITER RIBBON.

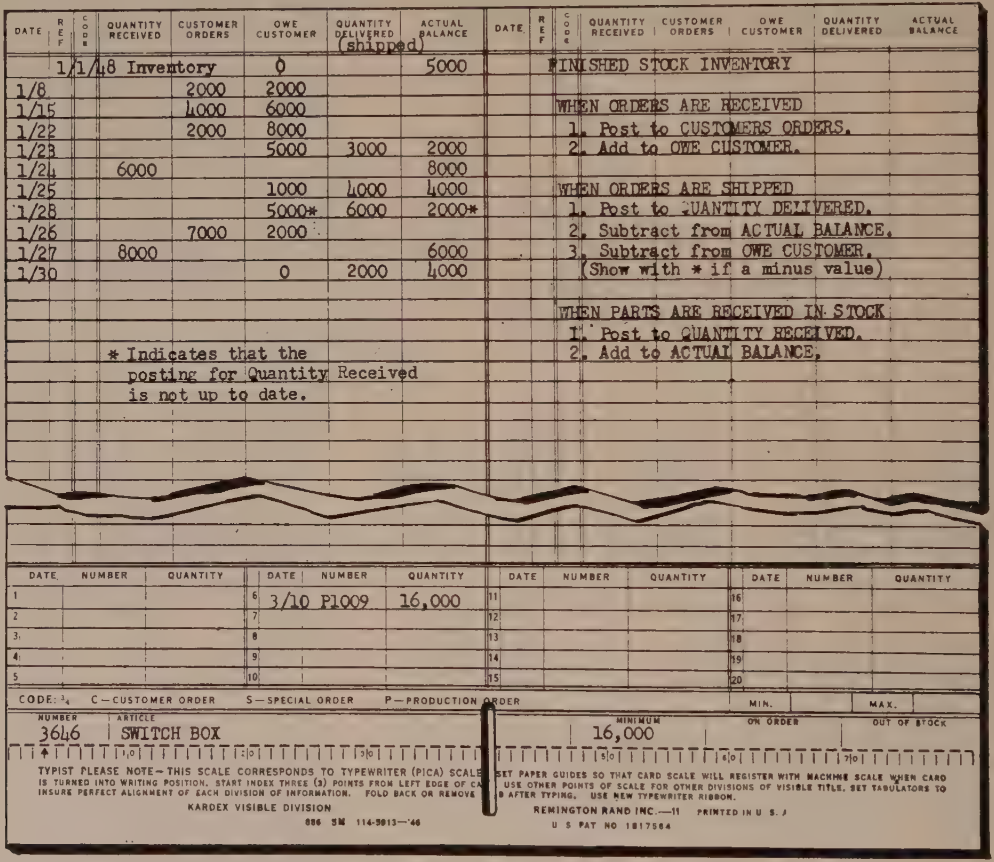
KARDEX VISIBLE DIVISION REMINGTON RAND INC. PRINTED IN U. S. A.

CAT. NO. 1-0152-D

◦ ◦ ◦

LEFT

FIG. 1—Record of Sales shows total orders by month. On these figures, estimates of future orders and production scheduling are based.



DATE	REF	CODE	QUANTITY RECEIVED	CUSTOMER ORDERS	OWE CUSTOMER	QUANTITY DELIVERED (shipped)	ACTUAL BALANCE
1/1/48 Inventory					0		5000
1/8				2000	2000		
1/15				4000	6000		
1/22				2000	8000		
1/23					5000	3000	2000
1/24			6000				8000
1/25					1000	4000	4000
1/28					5000*	6000	2000*
1/26				7000	2000		
1/27			8000				6000
1/30					0	2000	4000

* Indicates that the posting for Quantity Received is not up to date.

DATE	REF	CODE	QUANTITY RECEIVED	CUSTOMER ORDERS	OWE CUSTOMER	QUANTITY DELIVERED	ACTUAL BALANCE

FINISHED STOCK INVENTORY

WHEN ORDERS ARE RECEIVED
1. Post to CUSTOMERS ORDERS.
2. Add to OWE CUSTOMER.

WHEN ORDERS ARE SHIPPED
1. Post to QUANTITY DELIVERED.
2. Subtract from ACTUAL BALANCE.
3. Subtract from OWE CUSTOMER.
(Show with * if a minus value)

WHEN PARTS ARE RECEIVED IN STOCK
1. Post to QUANTITY RECEIVED.
2. Add to ACTUAL BALANCE.

	DATE	NUMBER	QUANTITY		DATE	NUMBER	QUANTITY		DATE	NUMBER	QUANTITY		DATE	NUMBER	QUANTITY
1				6	3/10	P1009	16,000	11				16			
2				7				12				17			
3				8				13				18			
4				9				14				19			
5				10				15				20			

CODE: C—CUSTOMER ORDER S—SPECIAL ORDER P—PRODUCTION ORDER MIN. MAX.

NUMBER	ARTICLE	MINIMUM	ON ORDER	OUT OF STOCK
3646	SWITCH BOX	16,000		

TYPIST PLEASE NOTE—THIS SCALE CORRESPONDS TO TYPEWRITER (PICA) SCALE—SET PAPER GUIDES SO THAT CARD SCALE WILL REGISTER WITH MACHINE SCALE WHEN CARD IS TURNED INTO WRITING POSITION. START INDEX THREE (3) POINTS FROM LEFT EDGE OF CARD. USE OTHER POINTS OF SCALE FOR OTHER DIVISIONS OF VISIBLE TITLE. SET TABULATORS TO INSURE PERFECT ALIGNMENT OF EACH DIVISION OF INFORMATION. FOLD BACK OR REMOVE STUB AFTER TYPING. USE NEW TYPEWRITER RIBBON.

KARDEX VISIBLE DIVISION REMINGTON RAND INC.—11 PRINTED IN U. S. A.

886 SM 114-5013—'46 U S PAT NO 1817564

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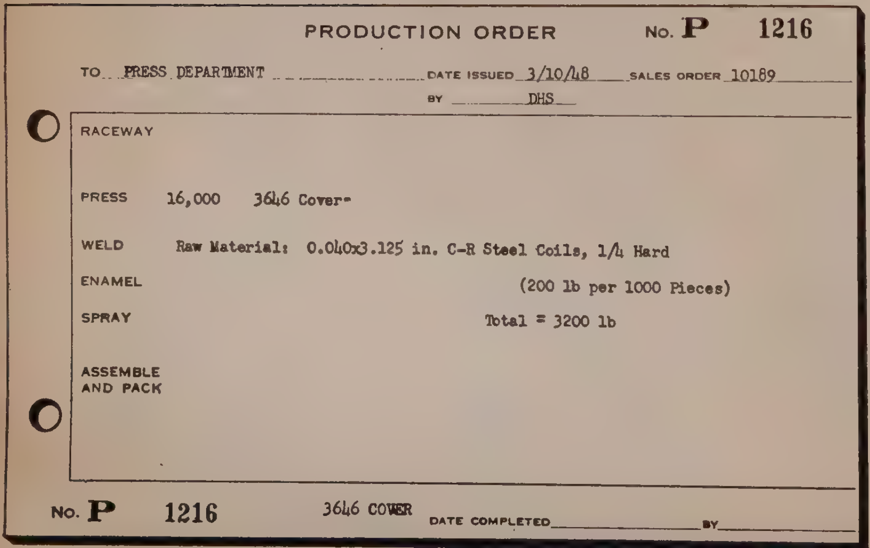
RIGHT

FIG. 2 — Finished Stock Inventory is a balance sheet maintained for each product, showing sales, production and number of parts in stock.

◦ ◦ ◦



PRODUCTION ORDER No. P 1216

TO PRESS DEPARTMENT DATE ISSUED 3/10/48 SALES ORDER 10189

BY DHS

RACEWAY

PRESS 16,000 3646 Cover-

WELD Raw Material: 0.040x3.125 in. C-R Steel Coils, 1/4 Hard

ENAMEL (200 lb per 1000 Pieces)

SPRAY Total = 3200 lb

ASSEMBLE AND PACK

No. P 1216 3646 COVER DATE COMPLETED ______ BY ______

◦ ◦ ◦

LEFT

FIG. 3—Production Orders go to the foreman of the manufacturing department from the production controller to indicate materials to be used and to authorize production operations.

◦ ◦ ◦

Control . . .

In an Electrical Equipment Plant

Production control and scheduling can make or break plants handling a variety of small product orders. This article describes the methods employed in one plant, making electrical switch boxes, wiring fittings and other parts, to coordinate scheduling and to maintain accurate records of inventories, work in process and production costs.

By DANIEL H. SPOFFORD
Assistant Factory Manager,
Wiremold Co.,
Hartford, Conn.

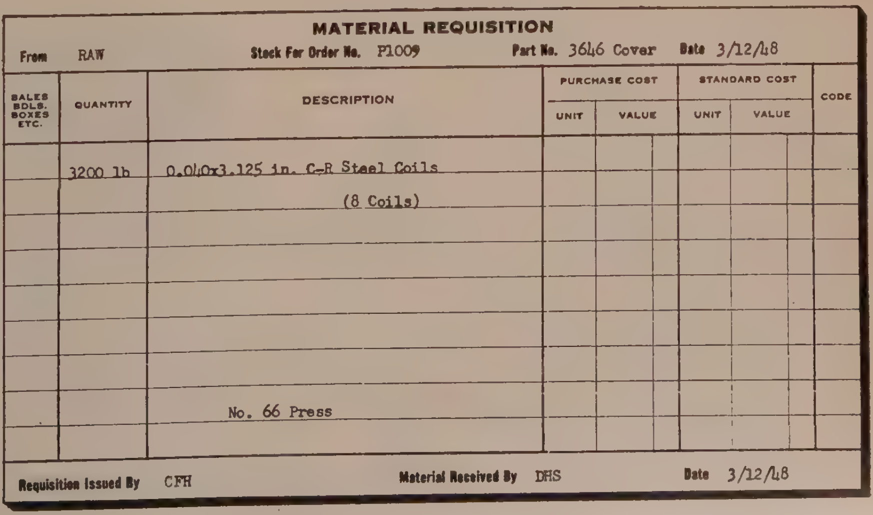
PRODUCTION control and scheduling is much like a game of chess—a variety of men, machines and materials must be coordinated into peak efficiency.

It is rarely simple to determine the correct number of switch boxes, or other products, to be run. For that matter, it is difficult to establish what material is to be fabricated and what machines should be used in the operation. The production controller has to know every move that is going to be made in fabricating an article from the time the raw material arrives in the receiving room until the article is fabricated, painted, packed and shipped.

In determining the quantity to be run, sales of the article, which are kept in a Finished Stock Record, are consulted. The production run must be of enough pieces to make it economical to set up the machines. And material required for the production must be organized in order that the machines will not be interrupted or set up unnecessarily.

In these times of shortage, it is usually necessary to consider what other articles are to be made from the same type of material so that allocation can be made proportionately.

Overproduction is an easy-to-make mistake. Too large a run may prove uneconomical not only



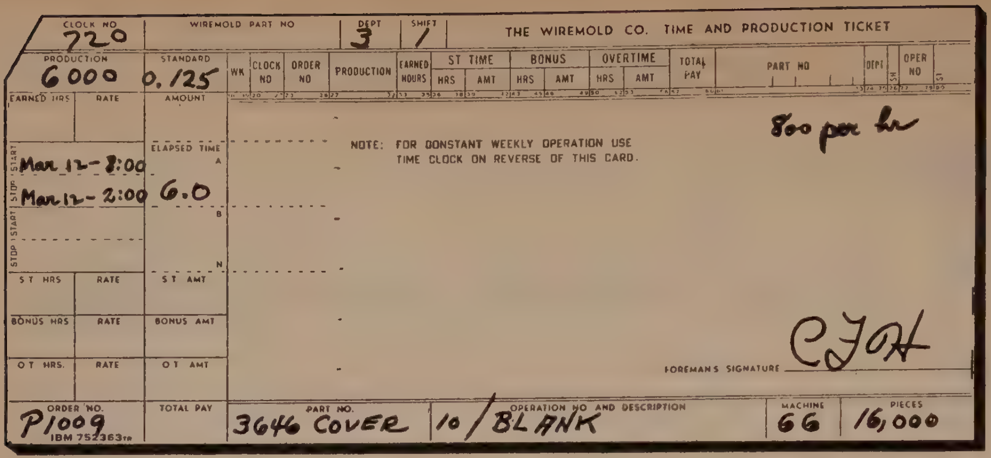
MATERIAL REQUISITION

From RAW Stock For Order No. P1009 Part No. 3646 Cover Date 3/12/48

SALES BDLS. BOXES ETC.	QUANTITY	DESCRIPTION	PURCHASE COST		STANDARD COST		CODE
			UNIT	VALUE	UNIT	VALUE	
	3200 lb	0.040x3.125 in. C-R Steel Coils					
		(8 Coils)					
		No. 66 Press					

Requisition Issued By CFH Material Received By DHS Date 3/12/48

FIG. 4 — Raw Material Requisition order goes from the manufacturing foreman to the stockroom for necessary materials. After delivery, the requisition is sent to the production control department for inventory correction.



THE WIREMOLD CO. TIME AND PRODUCTION TICKET

CLOCK NO 720
WIREMOLD PART NO
DEPT 3
SHIFT 1
PRODUCTION 6000
STANDARD 0.125

WK	CLOCK NO	ORDER NO	PRODUCTION	EARNED HOURS	ST TIME HRS	ST TIME AMT	BONUS HRS	BONUS AMT	OVERTIME HRS	OVERTIME AMT	TOTAL PAY	PART NO	DEPT	SH	OPER NO	ST

EARNED HRS
RATE
AMOUNT
START Mar 12 - 8:00
STOP Mar 12 - 2:00
ELAPSED TIME 6.0
A
B
N
S T HRS
RATE
S T AMT
BONUS HRS
RATE
BONUS AMT
O T HRS.
RATE
O T AMT

NOTE: FOR CONSTANT WEEKLY OPERATION USE TIME CLOCK ON REVERSE OF THIS CARD.

800 per hr

FOREMAN'S SIGNATURE CJH

ORDER NO. P1009
TOTAL PAY
PART NO. 3646 COVER
OPERATION NO AND DESCRIPTION 10 / BLANK
MACHINE 66
PIECES 16,000
IBM 752363

FIG. 6 — Labor Ticket shows the time spent on each order. This data is kept on the Work in Process sheets and is forwarded to the accounting department for cost computations.

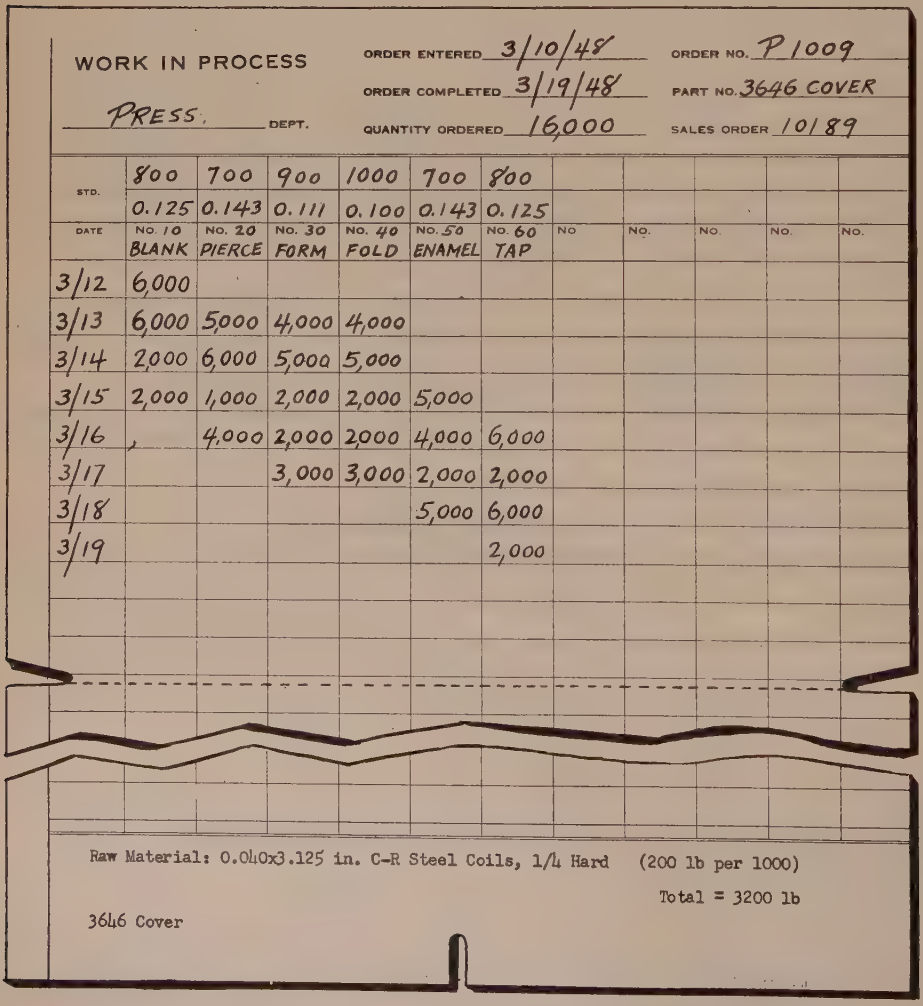
in piling up a costly large inventory, but in tying up tote boxes which should be kept moving and emptied to serve other parts. Also, obsolescence may catch up with overproduction to deflate the value of stockroom inventories.

A Kardex system, developed by Remington, Rand, Inc., has been found most efficient at the Wiremold Co., Hartford, Conn., for production control of sheet metal switch boxes and miscellaneous surface wiring fittings.

Fig. 1 is a monthly Record of Sales for a specific type switch box. This is used in estimating future sales and, hence, production requirements. Orders are issued normally about every four months and if there has been an abnormal amount of sales, building up a large backlog of orders, this can be determined from the Finished Stock Record, fig. 2, posted weekly.

The Monthly Sales Record is customarily kept attached to the back of the Finished Stock Record, which shows the following: (1) Influx of material to stock (quantity received); (2) customers' orders, posted weekly; (3) quantity owed customers (back orders); (4) quantities delivered (shipments); and (5) balance in stock.

Production Orders, fig. 3, are issued to start



WORK IN PROCESS

PRESS DEPT.

ORDER ENTERED 3/10/48
ORDER COMPLETED 3/19/48
QUANTITY ORDERED 16,000
ORDER NO. P1009
PART NO. 3646 COVER
SALES ORDER 10189

STD.	800	700	900	1000	700	800					
	0.125	0.143	0.111	0.100	0.143	0.125					
DATE	NO. 10 BLANK	NO. 20 PIERCE	NO. 30 FORM	NO. 40 FOLD	NO. 50 ENAMEL	NO. 60 TAP	NO.	NO.	NO.	NO.	NO.
3/12	6,000										
3/13	6,000	5,000	4,000	4,000							
3/14	2,000	6,000	5,000	5,000							
3/15	2,000	1,000	2,000	2,000	5,000						
3/16		4,000	2,000	2,000	4,000	6,000					
3/17			3,000	3,000	2,000	2,000					
3/18					5,000	6,000					
3/19						2,000					

Raw Material: 0.040x3.125 in. C-R Steel Coils, 1/4 Hard (200 lb per 1000)
Total = 3200 lb

3646 Cover

FIG. 5—Work in Process sheets are kept in the production control department to show status of all orders.

production rolling and to indicate the raw materials to be used. A white copy of this goes to the manufacturing department so that the foreman can schedule his machines. From the information on the order, the foreman will make out a Material Requisition, fig. 4, which is sent to the stock room for delivery of the necessary raw materials. A blue copy is sent to the accounting department for cost determination studies, and a yellow copy is kept in the production control department for future reference.

After all work on the order has been finished, the production foreman signs the white copy of the Production Order and returns it to the production control department so that the Work in Process sheet, fig. 5, can be closed out. From production control, the slip is routed to the accounting department to indicate that the work has been completed.

The Raw Material Requisition fig. 4, is sent from the production foreman to the stock room. After material is delivered, the requisition is sent to the production control department so that the quantity will be removed from the raw material inventory. Then, the requisition is forwarded to the accounting department for cost computations.

A labor or time and production ticket indicating the time spent on the order is shown in fig. 6. This is made out by the timekeeper in the manufacturing department and is sent to the production control group at the end of the run. Information on the ticket is posted on the Work in Process sheet, and the ticket is forwarded to the accounting department for use in making out the payroll and in determining total cost on the order.

After the work is completed, the Work in Progress sheet, fig. 5, is closed out and removed from the active file to a completed orders file.

Simultaneous Two-Color Enameling

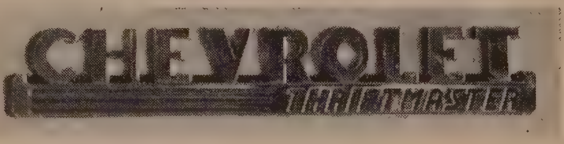


FIG. 1—Chevrolet nameplate requires a black enameled area along the base of the top letters and red stripes and letters in the recesses of the lower bar.

PLATED automotive parts frequently require decorative enameling of recessed areas, and often involve more than a single color. For one such application, the Brown-Lipe-Chapin Div., General Motors Corp., plant at Syracuse has developed a double spray gun for the simultaneous enameling of a two-color job.

The part is the Chevrolet hoodside nameplate, fig. 1, which requires a black area along the top, and at a lower level has recessed letters and stripes that must be decorated with red enamel. The operation could be done with two masks used in succession with separate guns, but this would require two spraymen or one operator shifting from one gun to the other. In either case it would mean a lengthened cycle.

To speed the operation, the special setup in fig. 2 was devised. Two spray units fastened together, have been arranged for simultaneous use by one operator. A shield, above the mask and at right angles to its face, keeps each color separate. While spraying, the gun nozzles are kept inside the top edge of the shield and are moved together parallel to the shield edge.

Both mask and shield are cleaned after a number of sprayings in a central degreasing unit which handles the masks from all of the department's enameling jobs.

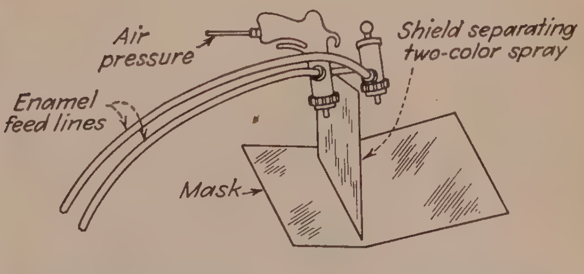


FIG. 2—In the photo an operator is shown spraying one of the nameplates. Sketch illustrates the principle of the dual spray system.

Compacting of Iron Powders

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An investigation conducted in Germany into the compacting of various iron powders is discussed herein. Influence of grain size and pretreatment of powder upon lowest possible compacting pressure, and density and strength of resulting compacts are the relationships stressed in this study.

○ ○ ○

IN an effort to determine the influence of various factors on the compacting of iron powder, an investigation was conducted employing the following powders: Hametag powder, which is produced from small pieces of wire, further comminuted in a mill of special design; two powders produced by granulation; and three powders made by reducing iron ores. In one experiment an electrolytic powder was also tested for the purpose of comparison.

In the first series of experiments the effect of particle size upon the strength of the compacts produced was investigated. For these experiments Hametag powder was used. The powder as received from the mill was classified by sieving into four groups and annealed at 1472°F in hydrogen. Compacts were produced from the four ranges of particle size, the pressings having all the same density of 5.9 g per cc. Obviously, in preparing the pressings the compacting pressure had to be varied according to the particle size tested.

The tensile strength of the compacts in the pressed state as well as after sintering for 2 hr at 1922°F in hydrogen is recorded in table I. The results show that the compacting pressure which must be applied for forming a pressing of a definite density decreases as the grain size of the powder increases. The tensile strength of the compact increases with decreasing grain size.

In the following experiments the effect of annealing Hametag powder upon the density and the strength of the compacts was investigated. A mixture consisting of equal parts of grain sizes 0.06 to 0.15 mm and 0.15 to 0.30 mm was annealed at various temperatures between 1112° to 1652°F for 2 hr in hydrogen and the compacts made therefrom were tested in the pressed state as well as after sintering at 1922°F for 2 hr in hydrogen. The results, recorded in table II show

This is a summary of an article by F. Eisenkolb, which appeared in Stahl und Eisen, vol. 66/67, 1947, p. 78. Translation and preparation of the abstract was performed by Wilhelm Werner, Dusseldorf, Germany. —Ed.

TABLE I

Influence of Compacting Pressure on Tensile Strength of Various Grain Sizes of Hametag Iron Powder.

Grain Size, mm	Compacting Pressure, Psi	Tensile Strength, Psi	
		As Pressed	As Sintered
0.30 to 0.60	26,307	37	3,043
0.15 to 0.30	29,150	215	11,177
0.06 to 0.15	34,125	392	15,500
Under 0.06	45,505	397	18,486

TABLE II

Relationship Between Density, Compacting Pressure, Heat Treatment and Tensile Strength of Hametag Iron Powder

Annealing Treatment	Density, g per cc, at Various Compacting Pressures			Tensile Strength (in Psi) at Various Compacting Pressures			
	21,330 Psi	28,440 Psi	35,550 Psi	28,440 Psi		42,660 Psi	
Not annealed	5.07	5.43	5.71	compacted	sintered	compacted	sintered
2 hr at 1112° F	5.09	5.40	5.74	54	7,352	95	12,101
2 hr at 1292° F	5.20	5.55	5.80	77	8,006	139	12,940
2 hr at 1472° F	5.24	5.57	5.83	85	7,921	196	14,291
2 hr at 1652° F	5.36	5.72	5.93	100	9,968	198	15,884

that both density and tensile strength increase with increasing annealing temperature.

With temperatures higher than 1652°F the iron particles fritted together and it was difficult to separate them afterwards. These powders showed inferior pressing properties. It is, however, possible that the unfavorable effect of fritting is not so pronounced if annealing at temperatures over 1652°F is carried out only for a short time.

The effect of storing the powder before pressing or aging at low temperatures was investigated in further experiments, the results of which are recorded in table III. Only the density of the compacts was determined since it had been found that, with the same powder, there exists a distinct relationship between density and strength. [The formula underlying this relationship is not given by the author.]

The experimental figures given in table III show that the compactibility of the powder is somewhat deteriorated by storing or aging. The effect of aging may perhaps be ascribed to the fact that by this treatment adsorbed moisture is removed from the surface of the powder particles whereby the beneficial antifriction effect of the moisture film is lost. The same is perhaps the case when compressing the powder at low temperatures. It may also be assumed that storing and heating the powder give rise to the formation of oxide films which increase the friction between the individual particles thus necessitating a higher compacting pressure for attaining a definite density of the pressing.

Assuming this viewpoint to be correct it must be possible to procure the formation of adsorbed films during cooling the previously heated powder. Several experiments were therefore carried on in which the powder was heated to 257° and 392°F, respectively, and cooled in oil vapors. It was found that in each case the powder treated in this manner gave pressings which under the same compacting pressure showed a higher density than the compacts made from powders cooled in air.

Density and tensile strength tests do not reveal anything about the uniformity of physical properties throughout the whole body of the pressing; i.e., about the uniformity of pressure distribution during compacting of the powder. Several experiments were conducted to find a method which would reveal the behavior of a powder with respect to pressure distribution.

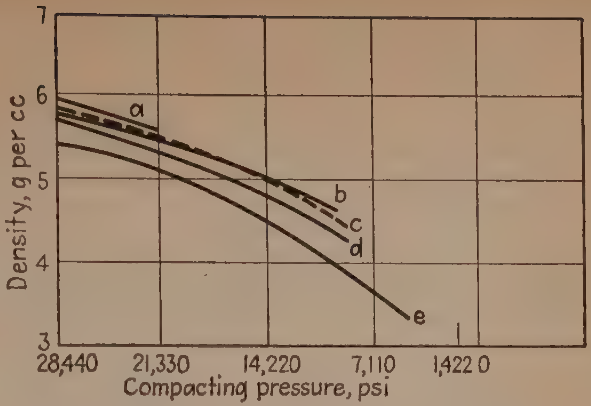


FIG. 1—Effect of compacting pressure on density of various grain sizes of iron powder; (a) = 0.30 to 0.59 mm (grain size), (b) = 0.75 to 0.29 mm, (c) = mixture 0.75 + 0.06 mm, (d) = 0.06 to 0.14 mm, (e) = under 0.06 mm.

The following method was finally adopted. Pressings of a cross-section of 1 sq cm and a weight of 6 g were prepared in a double-acting die. The compacting pressure was then diminished in stages until the resulting pressing collapsed when taken from the die. The results of some experimental series are shown in figs. 1 and 2. Fig. 1 shows the results obtained with Hametag powder of various grain sizes. As could be expected, the pressings became stronger with decreasing grain size though the density decreased.

For example, with a grain size under 0.06 mm, a compacting pressure of 4266 psi proved sufficient to yield pressings which could be taken from the die without damage, whereas, with a grain size of 0.30 to 0.59 mm, a compacting pressure of 21,330 psi had to be applied. Fig. 2 shows the results obtained with powders made by different methods of manufacture. From the curves it can be seen that the powder obtained by granulation method A, which partly consisted of particles of a spherical shape, gave the highest density. Its workability, however, ceased at a much higher compacting pressure than that of the powders made by reduction methods, which gave pressings of sufficient strength even at very low compacting pressures. This may perhaps be ascribed to the sponge-like

TABLE III

Relationship Between Density, Compacting Pressure and Pretreatment of Hametag Iron Powder.

Pretreatment of Powder	Density, (g per cc) at Various Compacting Pressures		
	21,330 Psi	28,440 Psi	35,550 Psi
Tested immediately after annealing in hydrogen	5.11	5.48	5.70
Stored for 5 days	5.04	5.40	5.69
Annealed at 230° F for 14 hr, then cooled	4.95	5.37	5.62
Annealed at 392° F for 2 hr, then cooled	5.00	5.38	5.63
Compacted at 122° F	5.03	5.36	5.68
Compacted at 212° F	4.99	5.36	5.68
Compacted at 302° F	4.85	5.21	5.53
Compacted at 392° F	4.86	5.22	5.42

TABLE IV

Merit Numbers Assigned to Iron Powders Calculated from the Ratio of Density to Lowest Possible Compacting Pressure.

		Merit Number*
Hametag Powder;	0.30 to 0.60 mm	4
	0.15 to 0.30 mm	7
	0.06 to 0.15 mm	7
	finer than 0.06 mm	11
Granulated Powder	A	7
	B	11
Electrolytic Powder		7
Reduction Powder	A	33
	B	27
	C	29

* Compacting pressure expressed in tons per sq cm.

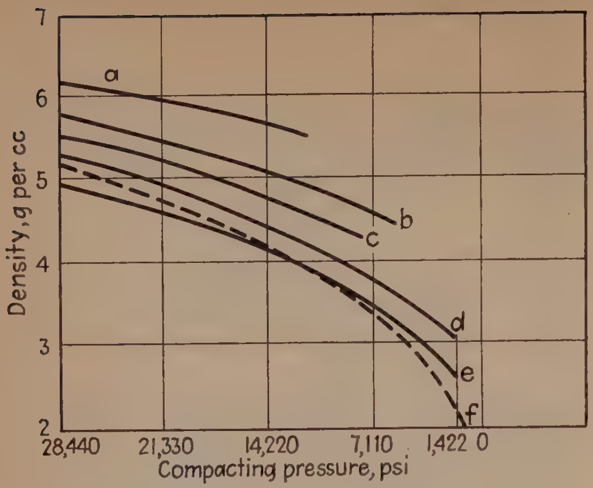


FIG. 2—Effect of compacting pressure on density of various iron powders manufactured by different methods. Methods of manufacture: (a) = granulation A, (b) = granulation B, (c) = electrolytic iron, (d) = reduction A, (e) = reduction B, (f) = reduction C.

structure of the reduction powders.

A well-known method of reducing friction and increasing uniformity of pressure is the use of a lubricant. In earlier experiments yellow resin proved very successful as an addition agent in the manufacture of articles that were difficult to press. It was found that artificial resin in amounts of 0.5 pct proved as efficient as yellow resin. In both cases a compacting pressure of 10,665 psi gave pressings of sufficient strength. With graphite on the other hand, in amounts of 1 pct, the compacting pressure had to be increased to 12,798 psi in order to get pressings that could be taken from the die without damage.

The experiments referred to above in which the effect of storing the powder upon the density and strength of the resulting pressing was investigated, were completed by further experiments in which the lowest possible compacting pressure was determined which had to be applied for obtaining pressings of sufficient strength. Hametag powder of medium grain size was used in these experiments, and it was found that with freshly annealed powder the lowest compacting pressure was 4977 psi. The same pressure proved sufficient when the powder had been stored for 2 and 4 days, respectively. After storing the powder for 6, 8 and 12 days, respectively, the pressure had to be increased to 5688 psi; and a further increase to 7110 psi was necessary when the powder had been stored for 16 and 20 days.

In several experiments on a commercial scale it was found that the compactibility of a powder was not always the same, though screen analysis, loading weight, and chemical composition complied with the specified values. This behavior may be ascribed to slight variations either in the annealing treatment or in the screen analysis. In order to assess the usefulness of a powder in a minimum of time the author proposes to test the compactibility only under a few definite pressures, as for example, 4266, 7110, 9954 and 12,798 psi.

According as the higher or the lower pressures must be applied to give a compact of sufficient strength, the powder must be given back for re-annealing or re-sieving, or can be used for routine work or special purposes. A further proposal of the author is to use a merit number for comparing the value of different powders with one another. This number is represented by the ratio of density to lowest possible compacting pressure. For the powders tested in the foregoing experiments the merit numbers listed in table IV were found.

Aluminum Bronze Alloys

(CONTINUED FROM PAGE 79)

test cycle would determine the degree of attack, or, if an adherent scale developed, it was regarded as probably protective.

These investigations indicated the following:

(1) All alloys except silver-bearing showed resistance to some extent, but the aluminum bronzes were the most resistant, being almost immune to attack.

(2) Introduction of 10 pct H_2O vapor made little difference to the relative scale rates, with aluminum bronze excelling.

(3) The presence of 0.1 pct SO_2 increased attack on all materials except the high aluminum bronzes and the silicon bronzes which were not affected.

(4) Increase of the sulphur dioxide to 5 pct showed pronounced attack on all alloys except the 10 pct Al, 3 pct Fe, and the 2 pct Al bronzes which still did not exfoliate.

(5) The presence in small amounts of moist hydrochloric acids had a marked accelerating affect on all test samples, but the aluminum bronzes, particularly those with high aluminum content, experienced only a small fraction of the sealing of other materials.

The curves in fig. 4 illustrate the scaling results for aluminum bronzes in dry air containing 5 pct SO_2. Low aluminum content alloys of 2 pct and 5 pct do not qualify, but the 12 pct Al and especially the 10 pct Al plus 3 pct Fe have no exfoliation; they seem rather to develop an adherent protective coating through additional exposure cycles.

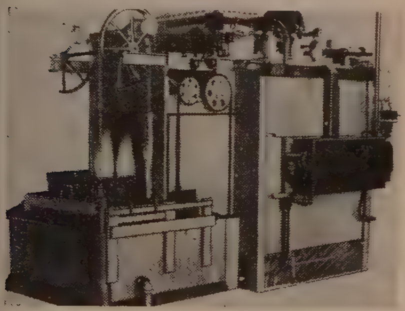
The data that has been given in the article is in no sense final. Research and development is continuing and new aluminum bronze alloys and refinements of presently known alloys may be expected. The aluminum bronzes as a class have long since outgrown the development stage and they are now available in grades and forms required to meet all usual conditions. Utilizing the close production controls developed over the past quarter century, these series of alloys are now available as sand or centrifugal castings, forgings, wrought rods and tubes, rolled sheet and even a full line of electric arc weldrods in a complete series of alloys.

New Production Ideas . . .

New and improved equipment and methods described this week include: A batch type furnace, drilling machines, straight side presses, a general purpose hammer, screw slotters, flame machining, a sheet edge positioner, a surface abrasion tester, portable impact wrenches and electric polishers, heavy duty chucks, milling cutters, weld nuts, and a liquid stainless steel.

Batch Type Furnace

A NEW batch-type furnace eliminates liquid bath treatment of automotive production parts. With a rated capacity of 600 to 700 lb per hr, a uniform case depth has been produced throughout the furnace load with a variation of ±0.0005 in. on a 0.003-in. case. Operating costs have been less than ½¢ per lb of steel treated. Design features of this unit include a screw drive mechanism for loading and unloading the furnace; higher speed of heating by means of 6 U-type radiant tubes surrounded by a heat capacitor. A gas generator system of catalytic type is incorporated in the radiant tubes to supply a gas neutral to medium high carbon steels. Safety controls, oil circulation and oil cooling equipment, 1½ hp drives for inner door and quench tank elevator, circulating fan, and gravity roll tables for stock handling are additional features. Floor space is approximately 7½ ft x 12½ ft, requiring head room of 13½ ft. *Dow Furnace Co. For more information, check No. 1 on the attached postcard.*



Drilling Machines

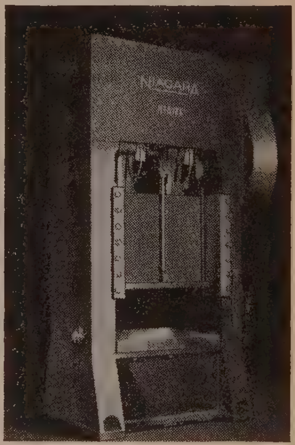
FEATURING increased operator efficiency with the V-belt drive direct from the motor to a four-speed geared transmission which is part of the top frame assembly, the Model D drilling machine is offered in 24 and 28-in. swing with a 24-in. head travel on column and 11-in. spindle feed. Ease in changing speeds is gained by an inching button on a four-station switch, and the four-speed transmission lever. Three ranges of spindle speeds are available for Models D-24 and D-28 drilling machines: 21 to 365 rmp; 25 to 419 rpm; and 37 to 650 rpm. Feed mechanism is driven directly from the main drive shaft through a steel feed worm and bronze worm gear. The rack pinion and shaft are made in one piece from alloy steel. The motor is 5 hp and provides ample spindle power for the recommended capacity of 1¾ in. in mild steel. Machines are equipped with electrical reversing for tapping. An adjustable stop collar on the graduated quill trips the feed at desired depth. *Sibley Machine & Foundry Corp. For more information, check No. 2 on the attached postcard.*

Tap and Drill Grinder

A LINE of combination tap and drill grinders combines all the advantages of the Grand Rapids tap grinder with those of their drill grinder, but costs less and requires half the floor space. Machines are built around a heavy rugged, one-piece column and base casting that is machined to take the greased-for-life precision ball bearing spindle. Either right or left hand 2, 3 and 4 flute taps may be sharpened with equal facility, and the holder may be adjusted to grind a very blunt taper such as required for bottoming taps, or the long taper necessary for tapper taps. A diamond truing device is provided for dressing the tap grinding wheel. The twist drill grinding attachment is suitable for sharpening 2, 3, and 4 flute twist drills with straight or taper shanks. *Gallmeyer & Livingston Co. For more information, check No. 3 on the attached postcard.*

Straight Side Presses

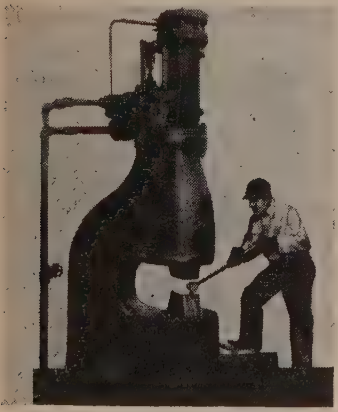
NEW all welded, straight side presses are manufactured in both the single and doublecrank variety. The machine illustrated, is a double-crank single geared tie rod frame press having a rated capacity near bottom stroke of 185 tons. With both single and double geared machines, the high speed shaft and flywheel with electro-pneumatic clutch are mounted within the crown above the crankshaft. Bearings on each side of the back-shaft pinion is said to prevent shaft deflection. This gives better gear tooth contact reducing gear noise and wear. Use of a five-way clutch control is optional on machines equipped with electro-pneumatic friction clutch. With this device it is possible, by setting a selector switch, to operate the press with front and rear buttons, with front buttons alone, rear buttons alone, continuously or by jogging



when setting the tools. *Niagara Machine & Tool Works. For more information, check No. 4 on the attached postcard.*

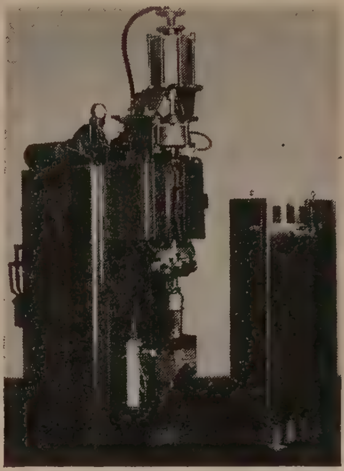
General Purpose Hammer

A PRACTICAL general purpose hammer, made in a range of sizes from 50 to 500 lb falling weight, can handle a wide variety of jobs from tool dressing and general light blacksmithing to emergency forging of repair parts or maintenance work. Where dies are employed, accurate work is assured by the integrated frame and anvil cast in one piece, preventing rock or sway. A new, automatically lubricated, powersaving cylinder cuts operating costs; and the new heat treated, ground face, alloy forged steel flat dies make work manipulation easier and enable the hammer to forge the tougher steels with fewer redressings. A self-seating rotary type valve directly connected to the throttle control gives greater air or steam efficiency and is one of the features attributing to economy on applied power. *Chambersburg Engineering Co. For more information, check No. 5 on the attached postcard.*



Balanced Load Welding System

STANDARD Thomson spot, projection, seam and flash welders and special-purpose resistance welders are now available with a Balanced Load, three-phase converter system which supplies low frequency, single-phase current for resistance welding while placing an evenly balanced moderate demand on a standard three-phase, 60 cycle, 220, 440, or 550 v primary power source. It offers advantages when welding work requiring deep throat machines or the introduction of large masses of material within the secondary circuit. Except for a special transformer, resistance welders using this converter system are conventional in design and existing machines may readily be adapted to use this method of power application. All additional equipment required is housed in a single, compact cabinet which also includes synchronous timing, heat and sequencing controls and the power converting unit. *Thomson Electric Welder Co. For more information, check No. 6 on the attached postcard.*



Tripping Mechanism Control

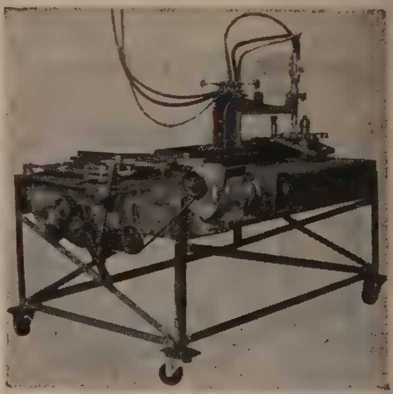
CONTROL of tripping mechanisms on punch presses, riveting machines, shears, spot welders, and air presses is possible with a new two-hand easy-to-operate electrical device. Light touch actuation —10 to 18 oz—reduces operator fatigue. Known as Microtrip, the device requires that both hands touch the switch buttons in order to operate the tripping mechanism. If both switches are not actuated at the same time, the electrical circuit controlling the tripping mechanism becomes inoperative. Microtrip consists of a control box, two precision switches, and the tripping mechanism. *Micro Switch. For more information, check No. 7 on the attached postcard.*

Screw Slotters

BUILT primarily for slotting heads of standard or special screws, a new semi-automatic screw slotter may also be adapted to special light milling operations on ends of uniform pieces. Speed and feed combinations may be arranged for cutting soft brass or tough steel. A set of back gears between the driving spindle and the saw carrying spindle allow a variation of cutting speeds for slotting saws and the drive to the work holding spindle is through a compound train of change gears. The machine will slot fillister and button head screws, ⅜ in. diam and 2 in. long; flat head, 5/16 in. diam and 2 in. long, headless, ½ in. diam and 1½ in. long. Greatest depth of slot is ½ in. Standard diameter of saw is 2¾ in. and width of slot is governed by saw. *Kent Machine Co. For more information, check No. 8 on the attached postcard.*

Flame Machining

FAST replacement of worn cast iron or cast steel sprockets and gears by flame machining is said to produce sprockets from steel plate in as little time as 5 min for a 12-in. sprocket. Employing a pantograph principle, an oxygraph cutting head assembly mounted on a track is moved forward and backward by mechanical linkage. Such movement is transmitted by following the contour of one of 20 basic cams, the design of which reflects standard and special sprockets and gears. The cutting head is led into the path of a revolving steel blank whose turning rate is related to the speed of the cutting head. Through combinations of cams, changes in the position of the pantograph legs, and substitution of various standard size driving gears, it is claimed more than 5000 types and sizes of sprockets and gears can be flame machined to a greater



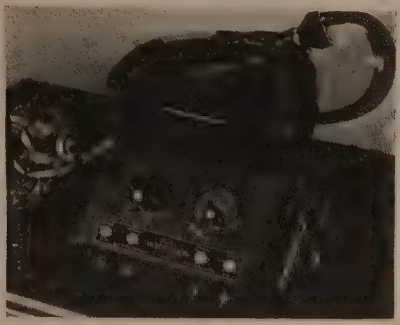
iracy in pitch, concentricity, contour than obtained by cast- As each sprocket or gear is ie machined, the wearing sur- of each tooth is said to be ghened, according to the char- eristics of the metal, and further hining is not necessary. *Cog- ic Co. For more information, ck No. 9 on the attached post- l.*

et Edge Positioner

HE edge position of any sheet- like material entering a process r rollers can now be automati- y controlled within limits as row as ±0.05 in., by a combina- of Askania standard control ponents, with the addition of a of air nozzles. Air from one zle is received by the other ch is connected to the dia- agm of a pressure regulator. sheet moving between the air zles cuts a certain amount of the of air to give an impulse to diaphragm. This impulse is nsmitted to the diaphragm of regulator, which supplies power cylinder to change the position he sheet on the roller by pivot- the axle of the roller or by ing it from side to side. This trol is recommended for any cess in which coating, coiling, n endless belt conveyer is used. *ania Regulator Co. For more rmation, check No. 10 on the ched postcard.*

asion Testing Set

ETERMINING wear resist- ance of electroplated, porce- enamel, organic coating, glass, plastic surface finishes is pos- e with a new abrasion testing that incorporates a rotary ding action on a 4-in. speci- . The wear results from alter- ly rubbing the flat faces of two lient Calibrase wheels over the surface being tested. New features include an improved suction pump with a vertical dust receiver with swinging nozzle fully adjustable for any thickness specimen. The control panel is equipped with an adjustable timer to provide a test period of 1000 cycles or less, and then automatically shutting off the power. The control unit is equipped for dual operation. *Taber Instrument Corp. For more information, check No. 11 on the attached postcard.*

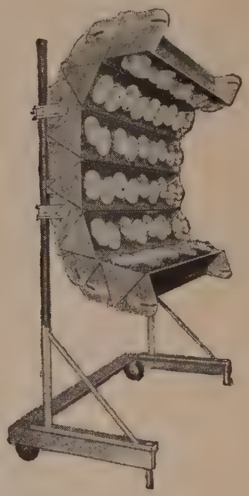


Tractor Shovel

APPLICATION of four wheel drive principle to a tractor shovel is announced with the introduction of the Model HM Payloader. This unit, largest of the line, has a bucket capacity of 1½ cu yd and a static loading capacity of 6000 lb. Four wheel drive is provided for off-road power, traction and flotation. Power steering on rear wheels simplifies steering and short wheelbase and fully-reversing transmission with four speeds in either direction offer maximum maneuverability. Bucket raising, lowering, dumping and closing are accomplished by double acting hydraulic rams. Automatic quick tip-back of the bucket is provided as it is raised so that heaped loads can be retained without spillage and carried low for good machine balance and operator visibility. The 76-hp engine provides top speed of 16 mph. It is equipped with 14.00-24.00 road builder tires. The machine digs, loads and performs operations of bulldozer. *Frank G. Hough Co. For more information, check No. 12 on the attached postcard.*

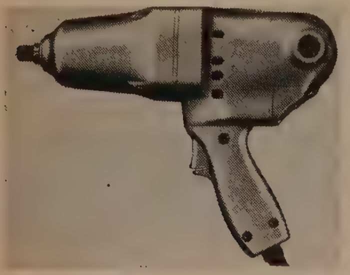
Portable Infra-Red Oven

NEW Instant-Shape portable infra-red ovens are adaptable to dry any shape article as each row of lamps has adjustable construction that permits the entire lamp assembly to be shaped to obtain maximum infra-red heating efficiency. The oven can be formed into a complete circle by bringing the top and bottom rows together. R-40 high efficiency reflector lamps are used and lamps are slightly staggered for even heating. Units are available in sizes from 3 to 10 rows. *Wil-Son Mfg. Corp. For more information, check No. 13 on the attached postcard.*



Impact Wrenches

A NEW line of portable electric impact wrenches tightens or removes either left or right-handed nuts, bolts, and cap screws. This tool, rated at ⅜ in. thread diam, spins a free running nut or bolt to a seating position, with a high speed, direct-drive action, then within a matter of seconds a rapid, rotary hammering action drives the nut or bolt to maximum tightness. In removing a fastener the hammering action loosens the nut or bolt, and the direct-drive rapidly spins it free. Light weight and minor torque reaction reduce operator fatigue. The wrench is made of aluminum castings and has a B & D universal motor. Besides having a side handle with automatic-release switch, reversing switch, and a three-conductor cable and plug, the wrench may be obtained with six hexagon sockets ranging from 9/16 to 15/16 in. *Black & Decker Mfg. Co. For more information, check No.* 14 *on the attached postcard.*



Shear

THE No. 218 Unishear has been designed to cut 18-gage mild steel and other materials in proportion at speeds up to 15 fpm. Improved blade action is said to feed in the work so that little effort is required to cut straight lines, angles, curves and notches. Features listed include ball and roller bearing construction, automatic lubrication of plunger from gear housing, slide operated switch and minimum number of moving parts. The shear weighs 4¾ lb and is furnished with cable, wrenches, clearance gage and supply of lubricant. *Stanley Electric Tool, Div. Stanley Works. For more information, check No.* 15 *on the attached postcard.*

STANLEY
STANLEY

Portable Electric Polishers

IMPROVEMENTS in the Van Dorn line of portable electric polishers provide more power and easier operation. Both standard and automatic models have had the gearing changed to a single reduction, spiral bevel gear, increasing the motor power approximately 30 pct and the speed to 1500 rpm. On the automatic polisher the pump operation has been improved to include a lever that reduces operator fatigue and make it easier to reach than the plunger button formerly used. Both polishers are equipped with a 7-in. molded rubber pad, a 7-in. sponge rubber cushion pad, a lambswool buffing pad, a rocker-type switch, and a reversible side handle for either left or right hand operation. *Van Dorn Electric Tool Co. For more information, check No.* 16 *on the attached postcard.*

Liquid Stainless Steel

WITH the development of a new product called Liquid Stainless Steel, it is possible to apply a coating of pure stainless steel to any surface, by brushing or spraying. Stainless steel is broken down into flakes so fine that it flows almost like a liquid and this material is incorporated in a liquid plastic and solvent to bring it to brushing consistency. The product combines the durability of stainless steel with the water and chemical resistance and easy cleanability of plastics. It can be used on all wood surfaces exposed to fresh or salt water or spray, and in industrial uses for decorative or protective purposes. *Lockrey Co. For more information, check No.* 17 *on the attached postcard.*

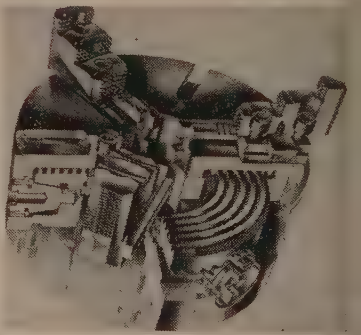
Milling Cutters

TWO inserted blade face-milling cutters added to the Nelco line include an extremely fine pitch face-mill for use primarily on cast iron, brass and bronze, with interchangeable blades for use on any material, and a mill designed to use standard carbide tipped lathe tools. The first mill features an adjustable blade to which a carbide or cast alloy tip is brazed. Although the tool can be resharpened with regular single point tool grinding equipment, it is recommended this tool be reground on a tool and cutter grinder for best performance. The second face-mill, designed for carbide tipped lathe tools, can be set up as a conventional cutter or a step cutter for use on older equipment and
where a wide variety of work
done. Both tools can be operat
with fewer teeth on lower powe
millers by pushing teeth back i
body. These tools are available

sizes from 6 to 14 in. diam. *Ne*
Tool Co., Inc. For more inform
tion, check No. 18 *on the attach*
postcard.

Heavy Duty Chucks

A LINE of extra heavy-du
three-jaw geared scroll chuc
developed for higher rates of me
removal are made with serrat
step-along jaws or with Americ
Standard tongue and groove ja
They are built in 8, 10, 12, 15,
21 and 24-in. sizes, and fit 6 to
in. American standard flanged sp
dle noses of any machine. Chu
body is forged from high carb
steel and back plate is cast iron
shock absorbing. The scroll is



chined of alloy steel, hardened
430 Bhn. Bronze bushings are us
at wear points and scroll and p
ions are provided with replacea
bushings. Pinion and scroll te
are designed to avoid uneven lo
concentration and metal deform
tion. The serrated jaw chuck
master jaws with limited tra
major adjustments being obtain
by positioning the reversible
jaws. *Warner & Swasey Co.*
more information, check No. 19
the attached postcard.

k-Weld Nut Combination

VHERE the application of nuts
to bolts in production work is
icult due to lack of space, or
ere metal sections are too thin
hread, a three point projection
d nut that reverses the applica-
process, has been developed.
nuts are welded in final posi-
and the bolt is screwed into
nut. The bottom of the nut is
nterbored about a quarter of
way through, causing metal
ticles to fall on the counterbored
tion instead of on the threads,
in the former nut-welding
cess. The thickness of the
pco weld nut is increased to
pensate for the threads re-
ved by counterboring, thread
th being the same as in a stand-
nut. *Grip Nut Co. For more
rmation, check No. 20 on the
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tery Charge Indicator

O prevent battery-operation in
an overdischarged condition,
ew charge indicator gives the
nentary charge condition of
ustrial truck batteries through-
a shift. The dash-board
nted instrument has three ma-
advantages: low cost, tamper-
of, and state of discharge
wn at any instant. The Wheat-
e Bridge type instrument can
used with 3, 6, 12, 15, 16, 18
24 cell batteries. *Gould Stor-
Battery Corp. For more infor-
ion, check No. 21 on the at-
ed postcard.*

tact Wheel

EVELOPED for heavy grind-
ing with abrasive belts at
eds of 10,000 sfpm or more, a
roll, called the K contact wheel,
the major advantages of faster
cooler stock removal, lower
duction cost, and chatter-free
ding. The combination of high
d and the new wheel design
laimed to enable abrasive belts
emove heavy metal stock faster,
erform better - finished snag-
, and to eliminate frictional
problems. Particular advan-
s are claimed in grinding gates
flashings on castings, welds
grinding through scale on
ings. The wheel is said to
long life on heavy mechanical
sure operations such as OD
and round bar grinding. It is
e in 8 and 16-in. diam, in face
hs of 2, 3, 4, and 6 in. and is
designed for use with cloth belts coated with silicon carbide or aluminum oxide mineral grains. *Minnesota Mining & Mfg. Co. For more information, check No. 22 on the attached postcard.*

Welding Electrodes

THREE new manual arc welding electrodes show high production rate per unit of time, improved weld quality, shorter training time for inexperienced welders and reduced operator fatigue. These Norelco electrodes deposit weld metal at rates from 25 to 100 pct higher than those of standard type electrodes, it is stated, because of low spatter losses and special coating. The penetration obtained considerably decreases the possibility of undercutting. Standard ac or dc welding equipment, reverse or straight polarity, may be used with these electrodes, which are available in lime ferritic, iron oxide and organic type coatings. *North American Philips Co., Inc. For more information, check No. 23 on the attached postcard.*

Bubbler Meter

GAS or liquid purge rates are measured in familiar flow units by a new purge service flowmeter. The Bubbler type purge meter is an adaptation of the Flowrator instrument that includes a built-in needle valve for close control of purge rates. It covers the range of measurement generally accepted as standard for bubbler installations. The unit consists of a Pyrex or stainless steel ball-shaped float, a precision-bore Pyrex metering tube and a die-cast body which houses the needle-type control valve. *Fischer & Porter Co. For more information, check No. 24 on the attached postcard.*

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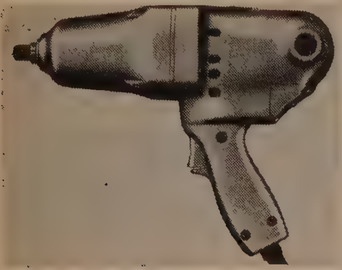
spins it free. Light weight and minor torque reaction reduce operator fatigue. The wrench is made of aluminum castings and has a B & D universal motor. Besides



having a side handle with automatic-release switch, reversing switch, and a three-conductor cable and plug, the wrench may be obtained with six hexagon sockets ranging from 9/16 to 15/16 in. *Black & Decker Mfg. Co. For more information, check No. 14 on the*

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able in lime ferritic, iron oxide and organic type coatings. North American Philips Co., Inc. *For more information, check No. 23 on the attached postcard.*

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omatic Weigher

DER explains and lists ad
ages of automatic weigh
which is designed fo
d visually indicatin
rapidly. An installa
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bed. *Streete*
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postcard.

ram

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included in Catalo
ustrates crane cab heat
air filters, crane rail sand
afety lights, lamp shock ab
bers and safety equipment mark
ers. *Lintern Corp. For more infor*
mation, check No. 31 on the
tached postcard.

Steel Fabrication

NEW handling facilities an
special equipment in two ne
plants for steel fabrication an
processing of fabricated parts ar
pictured in catalog. Various opera
tions together with typical struc
tural parts produced by each o
seven divisions are illustrate
R. C. Mahon Co. For more inform
tion, check No. 32 on the attache
postcard.

Pumps

A WIDE range of industri
pumps are presented in cata
log which contains illustratio
with construction features, speci
cations and engineering data liste
One type is designed to handle bot
corrosive and erosive liquids. C
pacity and hp tables are include
Marine Products Co. For more i
formation, check No. 33 on the a
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MESTA
50th
Anniversary

November 21, 1898 . . . . November 21, 1948

Mesta celebrates the completion of the first half century of its participation in American industrial progress and wishes to express its appreciation:

To the iron, steel, aluminum, copper and the many other industries for their patronage, their spirit of cooperation and their continued confidence in Mesta for the development of new techniques and the design and manufacture of modern equipment.

To our country's armed services for the reliance they have placed in Mesta for the design and manufacture of equipment to meet their special requirements.

To our employees, whose loyalty, industrial initiative and ability have been so large a factor in the success of the company and the service which it has been proud to render to our nation and to world-wide industry.

MESTA MACHINE COMPANY, PITTSBURGH, PA.

Assembly Line . . .

WALTER G. PATTON

• New Buick follows postwar styling but retains the individuality of its present models . . . Car is 3 in. shorter but has more room for passengers . . . Ford lights its new 1400 ton blast furnace.

DETROIT — The new 1949 Buick making its debut this week follows the now well-established trend of postwar car styling: full length fenders, a lower and wider grille, curved windshield and increased glass area. In contrast to other new postwar cars, however, the new Buick weighs slightly less than the predecessor model. Weight reduction is made possible by a combination of new type springing and complete redesign of the front seat and floor pan. As a result of this engineering change, overall length of the car is reduced by 3 in. At the same time, the leg room in the rear compartment is increased by the same amount. A new footrest, incorporated in the floor and the back of the front seat, gives additional leg room even when the front seat is moved back.

In contrast to some other new cars, headroom of the new models has been increased about ½ in.

The 1949 Buick models will employ the GM "C" body with many individual characteristics added by Buick. The Buick identification and individuality features have been well preserved in the new model, especially in the hood and grille. Numerous changes in the frame were required to achieve the increased passenger accommodations, it is reported.

All but two of Buick's 11 lines of cars are included in the model change. All Roadmaster and Super Buicks are affected; the Buick Special Series is not yet ready for introduction.

An addition to the 1949 Buick line is the Riviera, a steel top convertible that doesn't "convert." Instead, the Riviera offers the buyer all the styling advantages of the convertible and, as some automobile engineers will admit, "the owner gets increased protection without the rattles." Production of this new hard top convertible is scheduled for late spring, 1949. (It will be recalled that Kaiser-Frazer has also introduced a new hard top convertible recently.)

Buick engineers have indicated more than 100 mechanical advancements are incorporated in the new cars. Compression ratio of the engine has been boosted from 6.6 to 6.9.

A new "tailor-made" Dynaflow transmission has been designed to fit the Buick Super engine. Buick engineers say the torque-converter unit had to be completely redesigned to fit the Super powerplant. A considerable amount of new tooling is involved. Next year the Dynaflow will be standard on the Roadmaster series and optional on the Super series. It will also be optional on the new Special series scheduled for introduction "some time next spring."

Since introducing the Dynaflow drive last January, Buick has produced 60,000 of these transmissions.

Major engineering changes in the 1949 Buick Super and Roadmaster models include thicker section door posts, more extensive use of "double-walled" body construction and a huskier X-type frame.

The instrument panel is entirely
new and all instruments and p
pull controls are located on
left side. Dials are recessed
minimize reflection.

NEW box-type hinges pe
an increase of door o
ings from 75° to 90°. A new h
ing and ventilating unit has
pct larger core than the ea
models. The front seat is 3
wider.

Rear lamps are contoured
the after edge of the rear fenc
Each lamp serves as a stop li
tail light, directional signal
reflector. Built-in backup li
are standard on Roadmaster
and optional on the Super mo
Front and rear coil spring r
have been reduced to provid
softer ride. The rear coil sp
mounting has been moved t
position slightly to the rear of
axle center. Buick continue
use "frequency-controlled" en
mountings and low pressure
with extra wide rims. The
models have rims that are a
inch wider than conventional
wheels.

One of the most interesting
novations is a Buick-desig
valve lifter that keeps all
valves correctly set and sile
operating. Valve clearance is
at zero. According to Buick e
neers, tappet noise is elimina
even during engine warmup.
new valve lifters are stand
equipment on the 1949 B
Super and Roadmaster mo
equipped with Dynaflow d
transmissions.

•

Ford Motor Co. Almost Doubles Their Capacit With New Blast Furnc

Detroit

• • • **Top executives** of the
Motor Co. were present this
when its new 226-ft blast fur
was lighted. The new stack
been formally designated as
"William Clay Ford." Other
blast furnaces are the "He
and the "Benson."

Informed sources believe

he *Airless* Wheelabrator

Abrasive Blast Cleaning Process

Replaces 4 Tumbling Mills

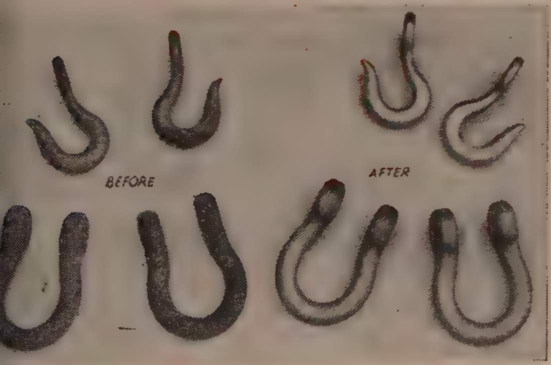
Provides a perfect anchor for galvanizing and japanning

Eliminates Pickling prior to Galvanizing

The many savings that accrue from the use of the Wheelabrator method of Airless Blast cleaning have been proved again. Installation of a 27″ x 36″ Wheelabrator Tumblast (5 cu. ft. capacity) at the Boston & Lockport Block Co. of East Boston, Massachusetts, completely revolutionized their cleaning operation. Loads averaging 400 lbs. of forged steel tackle blocks are now cleaned in ten to fifteen minutes. By previous methods, even smaller loads had to be tumbled for 20 minutes and then pickled for a period of one to eighteen hours, depending upon the type of forging.

With the installation of the Wheelabrator, it was soon discovered that FOUR tumbling mills could be eliminated and pickling discontinued, for all pieces which could be Wheelabrated. In addition, the thoroughness and uniformity of the Wheelabrated surface provided the proper "anchor" to bond the galvanizing and japanning finish required.

Wherever the Wheelabrator is put to work it is slashing cleaning costs to new rock bottom lows. At the same time it scours the work uniformly clean in every fillet, recess, pocket, and cavity . . . right down to the gleaming virgin metal.



Typical WHEELABRATOR users n the Heat Treat and Forge Industry

Wyman-Gordon Co.
Billings & Spencer Co.
S.K.F. Industries Inc.
Plomb Tool Co.
Park Drop Forge Co.
Cushman Chuck Co.
Simonds Saw & Steel Co.
L. S. Starret Co.
Ex-Cell-O Corporation
Caterpiller Tractor Co.

This new booklet "Cleaning Problems Solved For Heat Treating and Forging Plants" contains many helpful suggestions on profitable cleaning. Send now for your copy.

American
WHEELABRATOR & EQUIPMENT CORP.
(Formerly American Foundry Equipment Co.)
510 S. Byrkit St., Mishawaka 3, Indiana

ROTARY CRADLE: *A rotary cradle method for conveying automobiles through the painting process has been installed at a new paint finishing plant of the Austin Motor Co., Birmingham, England. Special cradles carrying the bodies are suspended from an overhead conveyor traveling 7 fpm. Photo shows the main color spray booth.*

has invested in excess of $8 million in the new furnace which is expected to approximately double the company's present output of pig iron.

Hearth diameter is 27½ ft. The new blast furnace is expected to add at least 39,000 net tons of pig iron to Ford's present production of 43,000 net tons per month.

Approximately 6000 tons of steel were used in the construction of the new furnace. More than 600 freight car loads of brick were used to line the casing, the three stoves and down comers and in building a new cast house.

The new "C" blast furnace is located directly north of the present "A" and "B" furnaces.

The Ford expansion program is a major move to step up Ford's steel production which will, in turn, permit greater automotive output. At the present time, Ford output has been held considerably below plant capacity because of the company's inability to obtain steel.

In addition to construction of the new blast furnace, Ford is building three open-hearth furnaces and has added facilities in the rolling mill. It has been necessary to enlarge ore and raw materials storage docks substantially.

Ford is using a 519 ft long ore-and-coal handling traveling bridge crane to serve the new furnace. A 17-ton ore unloader, a blast furnace turbo blower, two transfer cars for ore and coke, a 400-ton hot metal railroad track scale, seven 400 cu ft slag ladles with pots and five 150-ton capacity torpedo-type hot metal railroad cars have been added. The new torpedo-type cars will permit faster dispatch of hot metal because of larger tonnage capacity and improved heat conservation.

The new "C" blast furnace will be fed by 15-ton skip hoist cars and average cars will consist of 39,000 lb of iron ore, 18,000 lb of coke and 7500 lb of limestone. Approximately 140 charges can be dumped into the new blast furnace during a 24-hr period. Blowers will furnish 280,000 cu ft of air per minute.

Ford expects to use approximately 55 pct of its blast furnace gas in its coke ovens, 20 pct to reheat the hot air stoves and 25 pct will go to power house burners.

About a third of the present Ford cement plant had to be torn down to make room for additional iron ore storage bins. Ford also found it necessary to transfer some of its large coal storage to Miller Road, south of the production foundry. Two new ladle pits will be housed in an extension now being added to the south end of the open-hearth building.

Stress Consumer Relations

New York

• • • **There's a new trend** in business relations in anticipation of a coming buyers' market. Emphasis is being shifted from public relations activity to customers relations, according to the latest su
vey of current business practic
conducted by the National Indu
trial Conference Board. No oth
significant changes in over
policy are in general being co
templated.

Most executives feel that t
present programs have undergo
little change since the end of t
war. However, 10 pct of the gro
find a greater need for public re
tions at all levels.

A few companies point to lab
difficulties as a factor influenci
management's decision on th
score. In two instances the launc
ing of new projects resulted
establishment of public relatio
departments.

Willys-Overland Planning
Some Overseas Expansi

Toledo, Ohio

• • • **Overseas assembly** facilit
for Willys-Overland vehicles will
inspected during the next month
Cyril Wilson, manager of techni
services of the Willys-Overland
port Corp.

Mr. Wilson is also assigned
give technical assistance to Will
Overland overseas distributors
the establishment of new assem
plants, and to advise on serv
problems and engineering phases
the special adaptations of the J
for agricultural and industrial

New plants for the assembly
Willys-Overland vehicles are c
templated for Amsterdam
Paris.

In the Far East a new assem
plant for all models in the Wil
Overland line is scheduled to co
into operation in Bombay
February, 1949. The plant will
owned and operated by Mahin
and Mahindra, Willys-Overland
tributors for India. R. J. Mara
the Willys-Overland Motors p
engineering department, has b
given a leave of absence to serv
technical adviser in starting op
tions at the new assembly plant

Another assembly plant is sc
uled for Batavia early in 1949.

Mr. Wilson's inspection tour
reach Ireland, England, Denm
Holland, Belgium, France, Swit
land, Italy, Turkey, India, Eg
and Portugal.

ASK STOKES

High Vacuum is NOTHING...but a Tool! Can it Solve a Problem for You?

HIGH Vacuum eliminates air entrapment in certain powder metal pressing. It is used to create inert atmospheres in furnaces for sintering and other treatment of metals and metal powders, for vacuum casting, and impregnation of metals. It is used for evaporation of metals and metallic salts as in the manufacture of magnesium and surface plating of optical lenses and mirrors.

These few, but established, fields of usefulness are so widely scattered over the field of industry as to suggest a great number of related but as yet undetermined fields of application.

Indeed, Stokes engineers are constantly studying new and broader applications for the processing equipment which Stokes has built to satisfy special requirements.

Stokes' experience of more than 50 years in the manufacture and use of high vacuum and special processing equipment; Stokes family of Microvac and Industrial Diffusion Pumps producing absolute pressures as low as 1/100 of a micron; Stokes High Vacuum Gages . . . mark Stokes as best equipped to deal with your inquiries in these new and widening fields.

The facilities of our engineers, our semi-plant-scale laboratories, our manufacturing plant, are at your service. We invite consultation.

F. J. Stokes Machine Company,
5904 Tabor Road, Phila. 20, Pa.

FJS

Stokes makes Vacuum and Special Processing equipment, High Vacuum Pumps and Gages, Pharmaceutical equipment, Industrial Tabletting and Powder Metal Presses, Plastics Molding Presses, Water Stills, and Special Machinery.

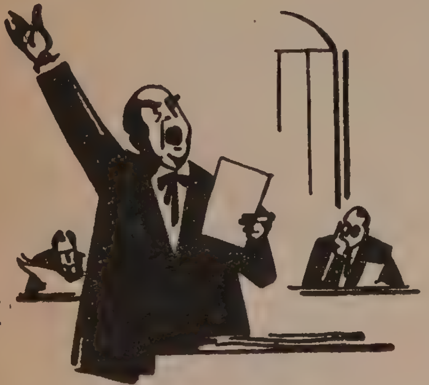
This space is crowded . . .
compared with High Vacuum.

STOKES KNOWS HOW

Washington . . .

EUGENE J. HARDY

• Control legislation being prepared . . . Allocations of some sort appear definite . . . Standby powers likely to result . . . Commerce takes mild view.



WASHINGTON—What is Congress going to do about price and allocation controls? This is the $64 question plaguing industry at this time, with allocation controls of particular concern to the steel industry. While Mr. Truman's Administration is committed to asking for allocation controls on steel this matter will not be one of solely partisan politics. The steel industry was in for a rough time even if the Republicans had emerged victorious in the recent election. More than one Congressional committee in the Republican-controlled 80th Congress gave the industry a thorough going-over.

A quick look at the situation at this early date indicates that all is not as black as is supposed in some quarters. The Commerce Dept. has already been told to work on control measures for presentation to the White House. With its experience in the handling of voluntary allocations the department is expected to come up with some relatively mild proposals.

Whether the President will accept these proposals or feel that he must propose, and anticipate getting, a completely regimented peacetime economy is a moot question. The odds are against it at this time. As one Commerce Dept. official put it: "What the President proposes, hopes to get, and actually gets from the Congress are likely to be three very different things."

As far as steel allocations are concerned, it is now apparent that there are four courses of action open to the 81st Congress which convenes in January:

Congress may (1) direct the President to put a program of compulsory allocations into effect immediately, (2) authorize the President to put such a program into effect on individual commodities as it becomes necessary, in other words, standby controls, (3) simply extend the present program of voluntary allocations beyond its Feb. 28, 1949, expiration date, (4) do nothing.

FROM a practical political viewpoint, it is plain that the first and fourth courses of action are the least likely to be followed. This narrows it down to the second and third, and a combination of these two appears to be the most likely result at this time.

In fact, the Commerce Dept. is almost certain to recommend a continuation and strengthening of the present voluntary allocations scheme, plus standby allocations and price powers.

This plan of action is similar to that asked by the President earlier this year. This earlier anti-inflation program was presented to the Congress by the then Secretary of Commerce, W. Averell Harriman. Mr. Harriman at that time pleaded for controls on a standby basis. Give the President these powers, he asked, and they will be put into effect only if "absolutely necessary."

Congress, of course, turned thumbs down on this proposal. Both the Senate and House apparently felt that Mr. Truman and Mr. Harriman would have lost little time in making full use of their new powers.

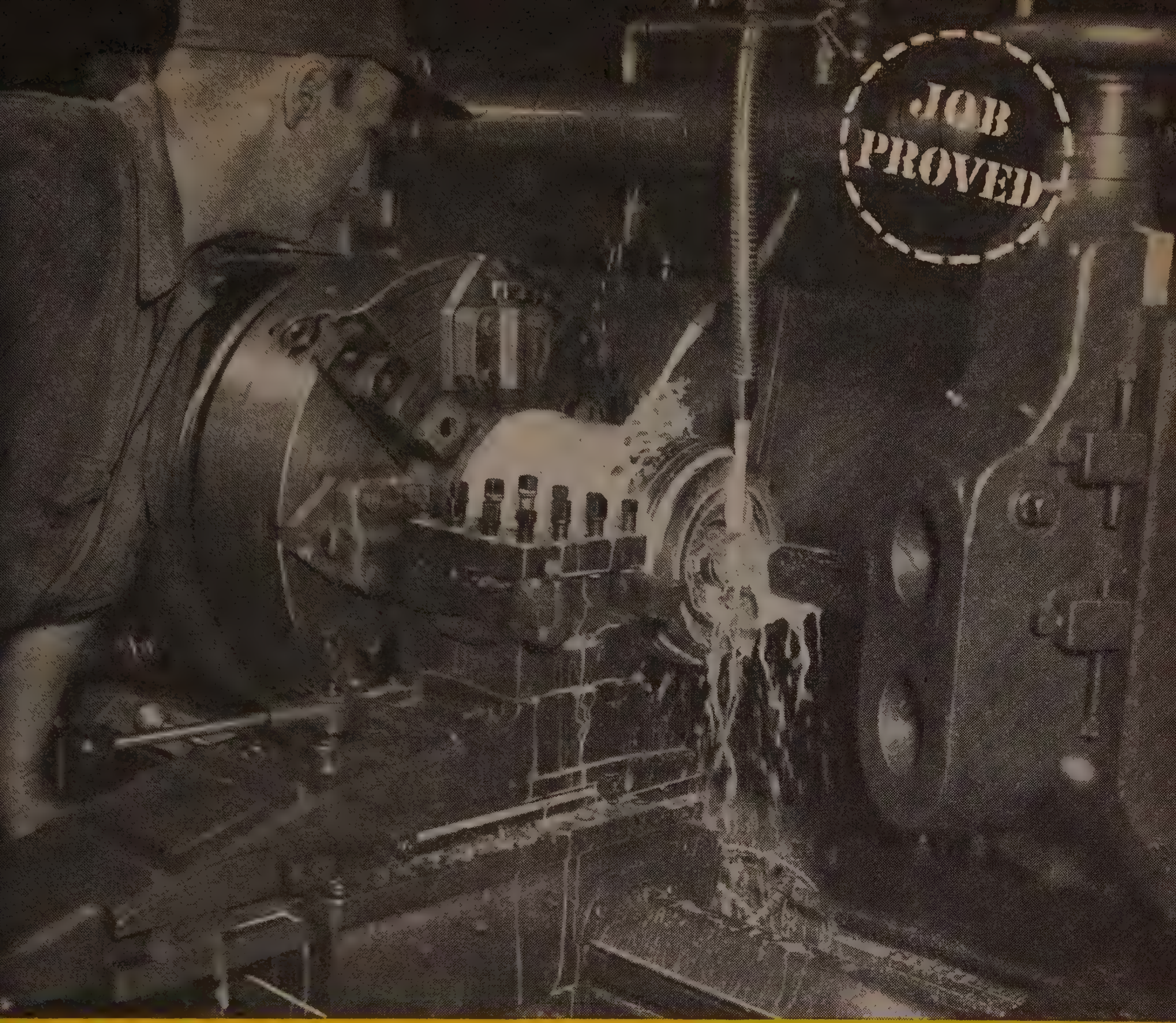
So it looks as though the sam proposition is about to be mad again. Members of Congress wh vote for the proposed program ca always take themselves off the sp by explaining to constituents tha they did not vote for controls a such, but only for the authority t use such controls if it should b come "absolutely necessary."

Critics of such a program poi out that it's a poor New Deale who fails to make fullest use of th administrative authority grante him or his agency or departmen With the possible exceptions of th Treasury Dept. and the Feder Reserve Board, the record of th executive branch of the Feder Government for the past 16 yea clearly shows that authority vote by Congress has generally been e ercised in toto.

Administration supporters, how ever, say that this is all differe now and point to the fact that th President chose not to exercise th compulsory allocation powers ov steel contained in the 1948 Dra Act.

THE present Secretary of Co merce, Charles Sawyer, is n control-minded and this belief reflected throughout the depar ment. Officials now working on t program to be presented to t President told THE IRON AGE th the department's experience wi voluntary allocations of steel in cates that a continuation of volu tary allocations plus standby po ers will be sufficient to han urgent and critical industrial nee They feel that the standby powe plus some changes in the volunta allocations law will be more th enough to induce steel and oth industries to go along.

Several of the voluntary allo tion programs, pig iron for housi and the warm heating equipme plan, for example, have run i rough weather. Commerce offici feel that with additional super sion the programs would work m smoothly. It is also hoped that, Congress extends this law, auth ity to hire dollar-a-year men v



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Duty Turret Lathe
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peration: Roughing-Out Cap for Pile-
Driving Machine
tting Fluid: 1 part Sunoco Emulsifying
Cutting Oil to 20 parts water

Sunoco Emulsifying Cutting Oil is a viscous, self-emulsifying oil that quickly and easily forms a stable emulsion with water. It contains no animal or vegetable fats, and will not turn rancid.

Sunoco Emulsifying Cutting Oil meets the demand not only of tough cutting jobs, but also of a wide range of turning, milling and grinding operations calling for close tolerances and fine finishes. It is particularly efficient where precision machining at high cutting speeds is demanded.

For full information, for samples to test on your own machines, for the services of a cutting oil specialist, call your nearest Sun office. Or write Department IA-11.

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Toronto and Montreal

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SUNOCO

be granted. Congress is also likely to be asked to broaden the scope of the voluntary allocations program and grant to participating firms more leeway within the limits of the present antitrust exemptions.

As part of its justification for continuation of the voluntary allocations set-up, Commerce is now working on a big study of the impact of voluntary allocations. It is hoped that this study will show the dangers in allocating too much of an important industrial commodity and also the exact amount of steel which the program has diverted from other uses.

Summing up, it appears at this time that the Commerce Dept., which is the likely agency to administer any system of allocation and price controls, is looking at the situation in a level-headed manner. Its recommendations to the President will surely reflect this view.

Generally speaking, top-level Commerce officials feel that controls cannot end shortages, but can be used to channel materials to essential segments of the economy. Hence, their belief that voluntary allocations of steel will do the trick, rather than risk putting countless firms out of business by a governmental pie-cutting of available steel supplies. This would further add to gray market activities, and would have a considerable inflationary effect.

WHILE it is extremely difficult to forecast accurately what the incoming Congress may do, it seems a pretty good bet that voluntary allocations will be continued and standby allocation powers will be enacted to be used at the President's discretion. Standby price powers might be enacted, but would probably be used primarily as deterrent rather than as a mea to roll prices back. Consumer r tioning is not in the cards, since is patently unnecessary.

Meanwhile, the steel industry in a position to get off on the rig foot on any program of controls it is willing to sacrifice some of i most competent key officials to a minister such programs, rathe than let a horde of bureaucrat grocery clerks fall heir to key pos tions by default.

Bureau of Mines Cites German Processes For Low Ash Coal Output

Washington

• • • **German processes** for producing coals of exceptionally low ash content suitable for the manufacture of high-grade electrode carbons are described in a Bureau of Mines publication as a part of the Bureau's coverage of foreign and domestic developments in coal technology.

The publication is one of a series of Bureau reports on wartime German developments in the mining, preparation and utilization of coal. It was prepared b H. G. Graham, Bureau mining en gineer associated with the Synth sis Gas Production Laboratori at Morgantown, W. Va., and L. Schmidt, chief of the Bureau Synthesis Gas Production Branc also stationed at Morgantown.

A free copy of Information Ci cular 7481, "Methods of Produ ing Ultra-Clean-Coal for Ele trode Carbon in Germany," ma be obtained by writing to the Pu lications Section, Bureau of Mine 4800 Forbes St., Pittsburgh 13, P

THE BULL OF THE WOODS BY J. R. WILLIAMS

KEEP IT UNDER YOUR HAT, DAVE, BUT OUR BID GOT THOSE TWO BIG NAVY YARD CRANES!
WHAT ARE THEY SKIPPIN' THAT ONE GUY FOR? GOIN' AROUND HIM LIKE A TOUCH-DOWN!
I GUESS IT'S BECAUSE HE CAN'T KEEP A SECRET VERY WELL!
MEAT
SECURITY
11-26
J.R.WILLIAMS

COPR. 1948 BY NEA SERVICE, INC. T. M. REG. U. S. PAT. OFF.

Commodity Standards Di Revises Band Saw Practic

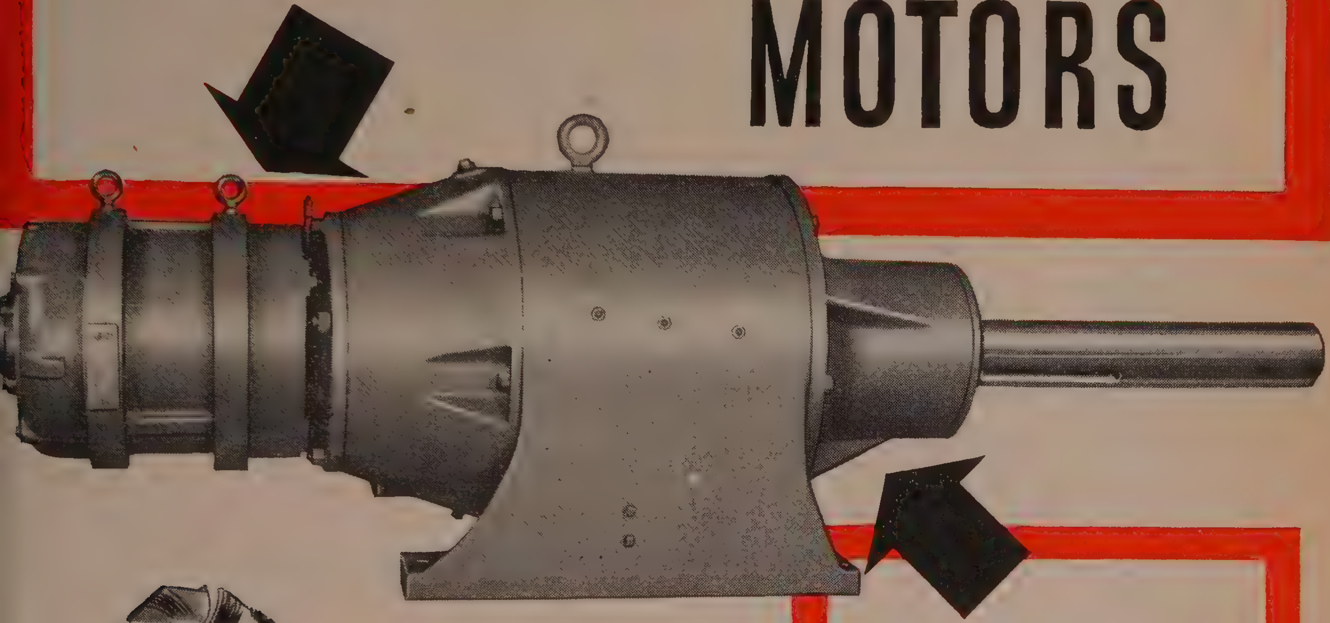
Washington

• • • **Revision of** the Simplifie Practice Recommendation f Metal-Cutting Band Saws has bee approved, according to an announc ment by the Commodity Standar Div. of the National Bureau Standards. The revision will be the serial number and title R214-4 Metal-Cutting Band Saws (Ha Edge, Flexible Back) and will effective from Dec. 15, 1948.

The recommendation consists a simplified list of stock types a sizes of hard edge, flexible bac metal-cutting band saws. Wid thickness, and number of teeth p inch are listed for two types saws, regular and skip-tooth. T recommendation includes size t erances as well as general pro sions covering type of tooth s shape of teeth, width of set a hardness.

Until printed copies of R214- are available, mimeographed copi of the recommendation may be c tained without charge from t Commodity Standards Div., N tional Bureau of Standards, Was ington 25, D. C.

HOWELL *industrial type* MOTORS



D. O. JAMES GEAR REDUCER

Here's a reliable gear-motor combination you'll want to look into.

Why?

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The gear reducer is built by the D. O. James Manufacturing Company, specialists in their field with more than 50 years' experience.

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West Coast . . .

ROBERT T. REINHARDT

• Nonferrous mines and smelters, faced with high costs and operating difficulties, struggle along . . . But some are expanding operations.

SPOKANE—An accute shortage of nonferrous metals, and especially of the base metals, copper, lead and zinc—the principals of the nonferrous group and vital ingredients in everything from household items to heavy machinery—exerts a strong upward pressure on the inflationary spiral. War created shortages, the fear of a new war, reconstruction of foreign economies, and government stockpiling plans, lie at the heart of a demand estimated to be two or more years ahead of the supply.

Not so many years ago, any enterprising person with a pick and shovel could roam the West, locate an ore deposit, and open a mine for himself. Today there is still an abundance of undeveloped western ore resources, but any new development requires large investments in heavy tools plus expensive manpower and the price of a lease. The entire mining industry is agreed that there are insufficient incentives to create a favorable climate for venture capital in high cost mining. However, there are extremely heated controversies going on with regard to premium plans and subsidy payments for production and exploration, and the range of opinion runs from those who become violent at the least hint of government aid to those who sincerely and with equal ardor proclaim that price subsidy is the only solution.

Despite this lack of agreement on what shape the industry's future is to take; labor trouble; and the difficulty in furnishing suitable housing in isolated areas for the right kind of manpower; a number of important nonferrous metal developments are taking place in the western United States.

In the important copper, zinc and lead family, Kennecott Copper Corp. and U. S. Smelting, Refining & Mining have announced a major mining development which will permit Kennecott to extend its open pit operations in the Bingham, Utah area. Principal project will be the driving of a new 4-mile tunnel with the portal near Lark, several miles southwest of Bingham Canyon where the present Niagara Tunnel is located. Three years will be required to complete the project. The new tunnel, to be known as the Bingham Tunnel, will connect with U. S. Smelting's Niagara No. 2 shaft at the 1000 ft level, and with other workings where necessary to replace present handling facilities.

Contract for installation of lead equipment in Kennecott Copper Corp.'s new copper refinery at Garfield, Utah, has been let to Andrews-Knapp Construction Co., Inc., of New York City. Excavation for the new refinery, which will have an initial capacity of 12,000 tons per month, was started a month ago and construction work is scheduled to get underway in the near future.

The refinery, first in that area, is expected to stimulate establishment of copper-using industries there and on the Pacific Coast.

ANOTHER important construction project already begun is a new flotation plant at the Coronado Copper and Zinc Mine in the Shasta Copper Belt, from which the Bohemia mining district of Oregon will soon be shipping copper, lead, zinc and gold concentrates. The flotation mill at Champion mine is now being readied for production.

The Federal Bureau of Supplies expressed amazement recently on learning that, although consumers are desperately begging for zinc, western mining companies are having difficulty in marketing the ore they are producing. Frank Luedke of Spokane, president of the Highland-Surprise Mining Co., said recently: "If a man started producing zinc for the first time today, he wouldn't be able to market his product. The smelters can't handle any more zinc than they are smelting now." Smelters in Idaho, Montana, and British Columbia will no longer accept zinc from new companies.

The great electrolytic zinc plant of the Sullivan Mining Co. at Kellog, Idaho, now being enlarged with a $750,000 addition, is taking only a limited amount of ore produced from old mines in the Couer d'Alene district. Present capacity of the plant is 3500 tons a month. Even the enlarged plant, completion of which awaits delivery of a specially built motor generator set, will be unable to handle all the zinc now being mined in Idaho.

On Sept. 1, Metaline Mining & Leasing Co. assumed active management of the property of American Zinc, Lead & Smelting Co. at Metaline, Wash. More than a year's supply of zinc-lead ore is available for immediate mining, James L. Leonard, company engineer has announced. In the same area, Pend-Oreille Mines & Metals Co. has commenced preliminary work for the installation of its new mining and milling plant which will ultimately increase its capacity from 750 to 2000 tons daily. Completion of this work is anticipated by the end of 1948.

Pend-Oreille Mines & Metal Co. has obtained excellent results on zinc refining in vacuum furnaces at the former magnesium producing plant at Mead, Wash. according to Dr. Francis C. Cary of Wilmington, Del. The company, which operates a lead-zinc producer, also controls Reeves-MacDonald Mines Ltd., just across the Canadian border, which is expected to reach the production stage ahead of schedule by the end of this year.

A possible solution to the shortage of zinc refineries has been urged by northwest mine operators

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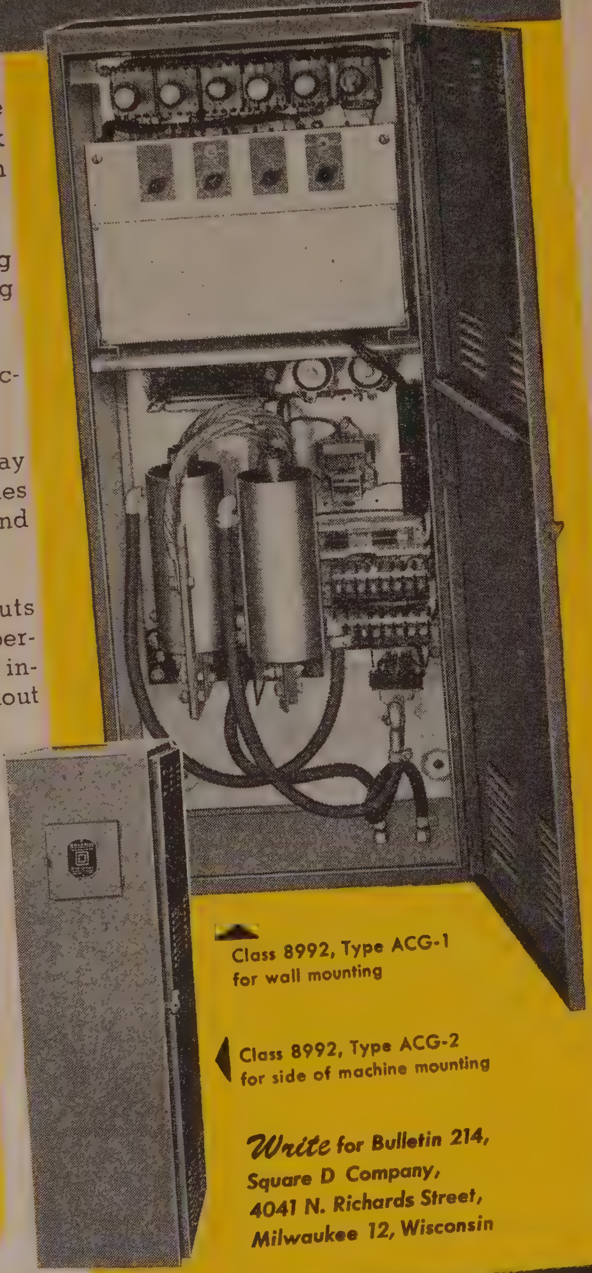

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on the return of United States mined zinc smelted in Canada. The huge smelter at Trail, British Columbia is nearer to northeastern Washington zinc mines than is any smelter in the United States. However, CIO unionists have fought the measure fiercely and have insisted that the processing of zinc be kept in the United States.

At Stibinite, Idaho, the Bradley Mining Co.'s $1,250,000 antimony-gold smelting plant is under construction, somewhat impeded by steel shortages. When completed the plant will be the only primary antimony smelter west of Texas. It will process only the output of the Yellowpine Mine at first, but by 1950 may accept jobs from other properties.

THE problem of obtaining chromium for government stockpiling and peacetime demands has been extremely critical, since manufacturers have attacked their postwar backlogs of product demand. Mines such as the Robertson chrome mine in Josephine County, Ore., the only chrome producing mine in the United States at this time, are finding that the margin between costs and market price is so narrow that development work is out of the question, and continued operation constantly threatened. On the other hand, several projected chromium operations have assumed major importance in the nonferrous world. American Chrome & Magnesium Industries, Inc., has signed a long-term lease with the Port of Anacortes, Wash. for a ship-harbor industrial site. The company is scheduled to construct chrome beneficiating and briquetting plants immediately. Chromium Mining & Smelting Co. has completed tests and is producing ferro-chrome-silicon in the electric arc furnaces formerly operated in connection with the plant at Mead, Wash., which during the war produced magnesium. The product is smelted from chrome ore shipped from New Caledonia, quartz mined from a quarry near Spokane, coal and coke.

James M. Orr and E. C. Boyd, Portland mining and chemical engineers, have leased the Harris sulphur grinding plant at Terminal #4 in Portland; drying facilities are being added and the plant is being altered to produce industrial minerals on a custom basis. Silver Gold Lode Mining Co. of Madison County, Mont. has adopted the bulldozer prospecting method recently, used with such success in the Couer d'Alenes of Idaho. P. E. Oscarson, Spokane mining engineer and geologist, is directing the campaign which is watched with considerable interest by the U. S. Grant Mining Co. operating the adjacent Easton-Pacific and by a second concern, tentatively proposing to reopen the Mallette estate's High-Up Mine.

The results of all these new activities, whether already operating or projected, are a prospective solution to serious shortages; whether they will be sufficient remains to be seen. At least it is certain that, despite heavy equipment costs, labor difficulties, and fantastic production budgets, the nonferrous mining industry is aiming—with a fair degree of optimism—at much fuller production.

•

Severance Tax Continues

Salt Lake City

• • • **Industry's hope** of stalling off a severance tax on natural resources for another 2 years was dimmed by the recent election which returned control of both houses of the Utah legislature to the Democrats.

At the insistence of organized labor the party wrote into its state platform an indorsement of the severance tax principle, which wil increase the already substantia pressures for such a revenue measure. In the past, a new severance tax has been opposed by both Republican and Democratic lawmakers on the grounds that it would discourage the state's budding industrial development. But th platform pledge plus the alway present pressure for more revenues will be hard for Democrati members to resist when the 194 session convenes in January.

•

Awarded Subcontract Wor

Santa Monica, Calif.

• • • **Douglas Aircraft,** which i working on varied military order at its El Segundo and Long Beac plants, announced that it has bee awarded a Boeing subcontract fo fuselage sections to be manufactured at its large Santa Monic plant where commercial orders ar about completed.

The 16-ft sections of the fuselages are for the big B-50. The contract calls for 200 units at a cost o $3,500,000 and will extend throug 1949.

OUT OUR WAY: *Owens Corning Fiberglas Corp. is constructing a 350,000 sq ft warehouse and manufacturing plant at Santa Clara. More than 2000 tons of structural steel from Bethlehem Pacific Coast Steel Corp.'s Alameda works will eventually be used in building this structure which is currently more than 75 pct completed.*

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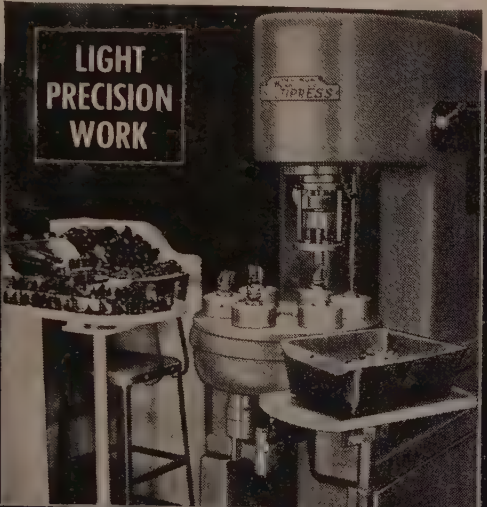
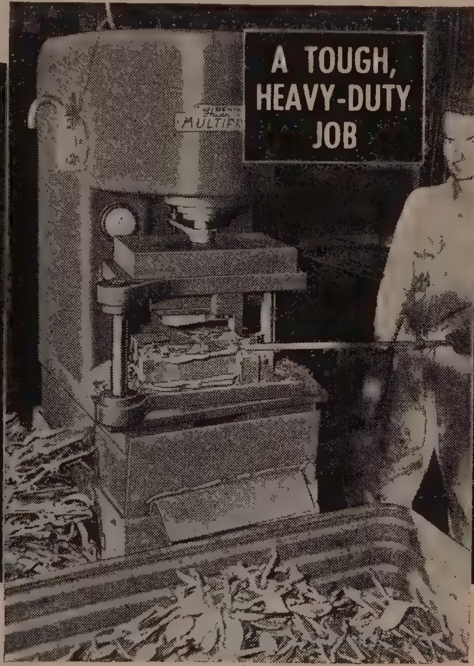
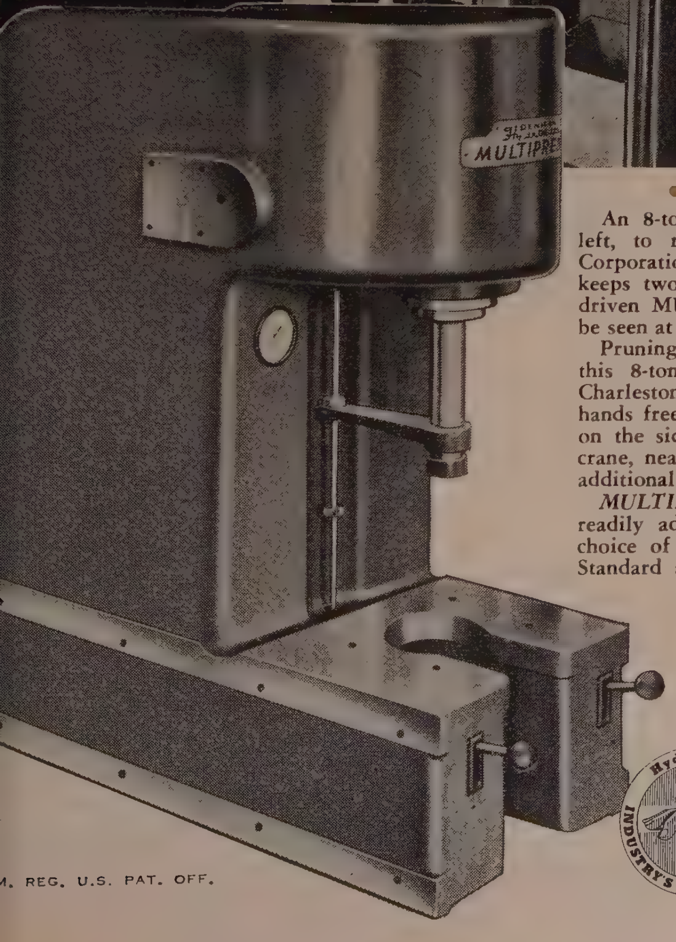




SPECIFICATIONS

8-Ton Multipress

Tonnage Capacity	8-Ton
Stroke	12"
Daylight	18"
Throat Depth	8⅛"
Approach Speed (Maximum)	300 ipm
Pressing Speed	200 ipm
Return Speed	300 ipm



An 8-ton MULTIPRESS with automatic ram control is being used at left, to rivet an assembly of ball-bearing caster parts at the Colson Corporation, Elyria, Ohio. Handling up to 1250 units per hour, the press keeps two operators busy loading assemblies onto the synchronized, oil-driven MULTIPRESS indexing table, from a conveyor system which can be seen at the left.

Pruning-shear forgings are trimmed rapidly under high pressure by this 8-ton MULTIPRESS at The American Fork and Hoe Company, Charleston, W. Va. Foot-pedal control of the ram leaves the operator's hands free for efficient handling of the forgings. Note the hooks mounted on the side of this Multipress to facilitate moving the unit, by overhead crane, near forge hammers at other points in the plant, where it handles additional trimming work. A heavy-duty job for a small press!

MULTIPRESS is a high-speed, high precision oil-hydraulic tool—readily adaptable to an amazing range of jobs. Available with a wide choice of manual and automatic controls of tonnage, speed and cycling. Standard accessories include benches, side shelves, work-table extensions, bolster plates, special toolings, indexing and dial-feed tables, and attachments for pelleting, foil-marking and other operations. Also in 4, 6, and 25-ton capacities—*plus the famous new one-ton MULTIPRESS Midget!* Write for details today!

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HOWARD M. DAWSON, president, Jessop Steel International Corp.

• **Howard M. Dawson** has been elected president of Jessop Steel International Corp., New York. Mr. Dawson had formerly served as vice-president and managing director of the corporation. Jessop Steel International is a wholly-owned subsidiary of Jessop Steel Co., Washington, Pa.

• **Nelson C. Walker** has recently been appointed assistant district manager of American Car & Foundry Co.'s Berwick, Pa., plant. Mr. Walker had been vice-president and general manager and later president of the United Tank Corp., which post he held prior to joining ACF.

• **John W. Humphrey,** executive vice-president of the Philip Carey Mfg. Co., and **Thomas C. Haydock** of Haydock & Co., have been elected to the board of directors of Crosley Motors, Inc., Cincinnati.

• **Charles I. Haslup** has been appointed sales manager of field operations for the Reading-Pratt & Cady division of American Chain & Cable Co., Inc. Mr. Haslup has his headquarters in Reading, Pa.

• **J. O. Cross** has been named director of industrial relations for U. S. Radiator Corp., Detroit. Mr. Cross formerly served as personnel manager for the Kaiser-Frazer Corp., Willow Run, Mich.

PERSONALS

○ ○ ○

• **W. J. Graham** has been appointed manager of sales of the forging and casting division of Allegheny Ludlum Steel Corp. at Ferndale, Mich. Mr. Graham joined the corporation as sales engineer in 1930 and has served in that capacity until his new appointment.

• **George F. Bateson, Jr.,** has been named assistant manager of the warehouse division of Republic Steel Corp., Cleveland, assisting in the management of the 24 fabricated product warehouses which Republic and Truscon Steel Co. operate throughout the country. Prior to his new position, Mr. Bateson served as sales manager of Truscon in Charleston, W. Va.

• **Carl L. Radway** has been named division superintendent, cold rolling mills, Cuyahoga Works, American Steel & Wire Co., Cleveland.

• **Fred S. Ehrman,** general sales manager of Bowser, Inc., Fort Wayne, Ind., has been elected to the newly-created post of vice-president and director of sales. Mr. Ehrman has been associated with Bowser since 1925 and has served successively in experimental engineering, sales engineering and divisional sales work.

• **W. J. McNeill** has been appointed assistant to the president, and **E. J. Stockum,** vice-president, has been named general manager of the G.H.R. Div., Dayton Malleable Iron Co., Dayton.

• **Herbert E. Johnson** has been named superintendent of transportation and labor for the Youngstown district of Youngstown Sheet & Tube Co. Mr. Johnson joined the company in 1944 as superintendent of transportation and labor at its Brier Hill works and held that position until his recent appointment.

• **G. B. Davis** has been promoted from assistant sales manager to sales manager, Baker-Raulang Co., Cleveland. Mr. Davis joined the company in 1935 and the sales staff of the Baker Industrial Truck division two years later.

JOHN A. PROVEN, general sales manager, Porter-Cable Machine Co.

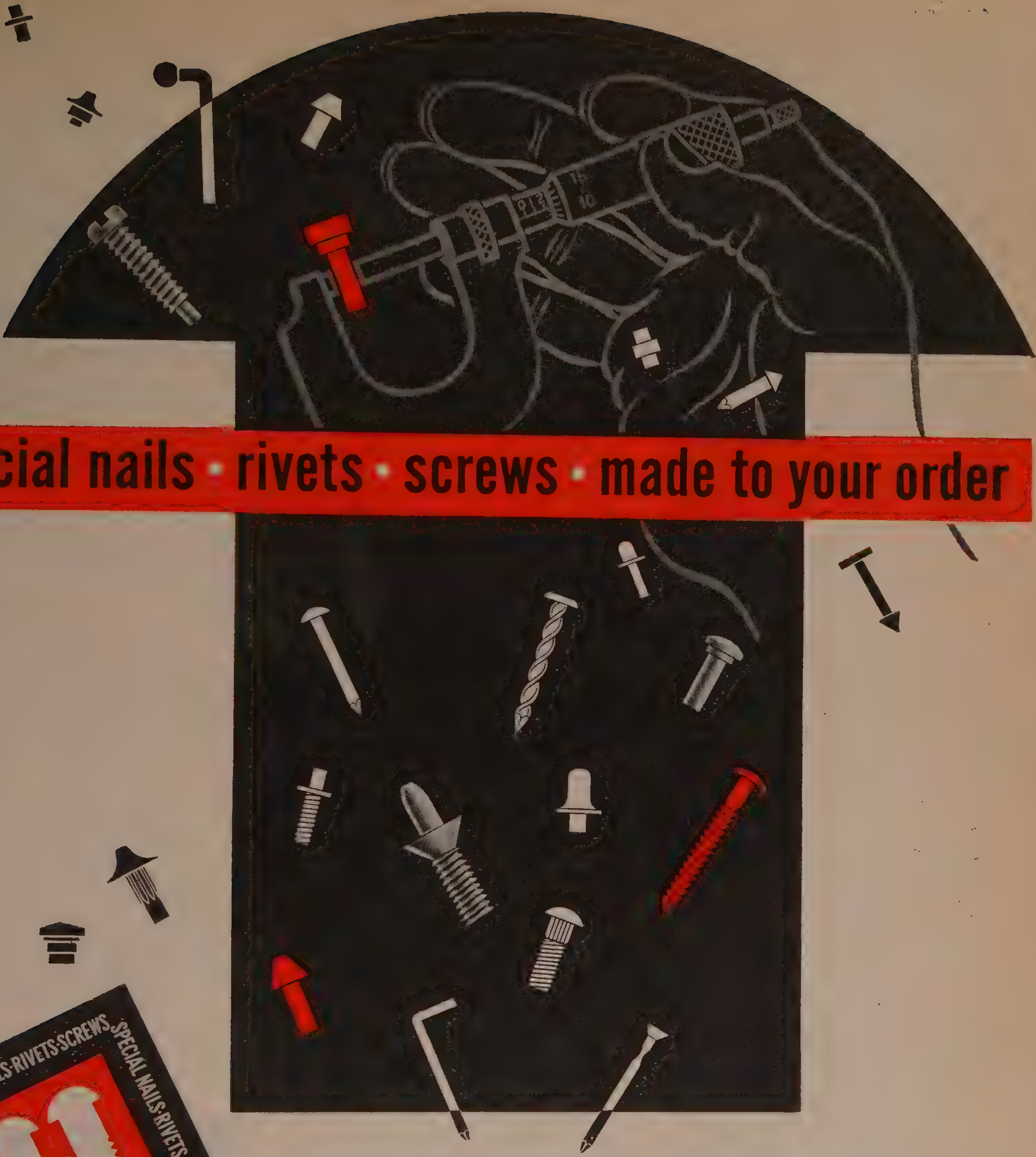
• **John A. Proven** has been named general sales manager of the Porter-Cable Machine Co., Syracuse, N. Y., also directing the sales efforts of the Unit Electric Tool Co., a division of Porter-Cable. He had formerly held the position of vice-president and sales manager of Sterling Tool Products Co., Chicago.

• **John C. Kuhn** has been advanced from sales manager to vice-president and director of sales, Morse Twist Drill & Machine Co., New Bedford, Mass **Stanley B. Lindh,** recently engaged in the paint industry in Boston, has been named to the newly-created post of sales promotion manager.

• **Norman J. Kilmer** has been named sales representative for Ohio Electric Mfg. Co., Cleveland in the Pittsburgh and Wheelin area. Mr. Kilmer's headquarter are located in Pittsburgh.

• **James C. Plunkett** has been named assistant advertising manager of the Columbia Chemica Div., Pittsburgh Plate Glass Co. Pittsburgh.

• **Gordon P. Lovell** has been appointed sales manager of the elec tric accounting machine division International Business Machine Corp., New York. Mr. Lovell joine IBM in 1932 and has served i various sales and executive ca pacities.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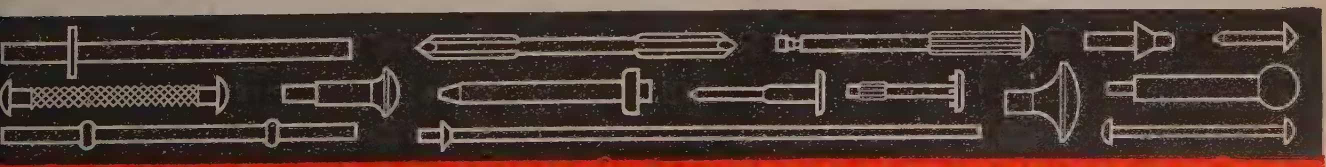

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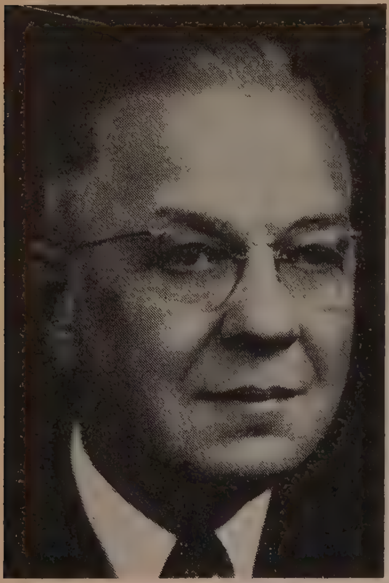

J. E. NIEDERHAUSER, vice-president in charge of industrial relations, Continental Can Co.

• **J. E. Niederhauser,** formerly manager of industrial relations, Continental Can Co., New York, has been elevated to the newly-created post of vice-president in charge of industrial relations.

• **Thomas B. Moule,** formerly assistant director of sales, has been appointed sales manager of the Plomb Tool Co., Los Angeles. Mr. Moule joined the company in 1944 and has supervised many important sales and merchandising activities.

• **William W. Eaton** has joined the Central Research Organization of Olin Industries, Inc., East Alton, Ill. Dr. Eaton had formerly been associated with the Photo-records division of Remington Rand. He has served as assistant plant manager of the Naval Ordnance Plant in Camden, Ark., and as development engineer for Eastman Kodak Co. Dr. Eaton has his headquarters in New Haven, Conn.

• **James D. Allan,** former manager of the Pratt & Whitney Cleveland Office, has been transferred to West Hartford, Conn., and appointed manager of domestic machine tool sales. **Frank W. Schreiner** has been appointed Cleveland sales manager. He entered the employ of the company in 1926 and has been a member of the Cleveland sales staff for 21 years.

• **Richard H. Lamont, Charles C. Northrup** and **Collins Boyce** have been assigned to the Eastern Ohio, Pittsburgh and Buffalo-Erie area, respectively, as salesmen for the A. B. Murray Co., Inc., with headquarters at the firm's McKeesport, Pa. warehouse office.

• **Joseph S. Sherer, Jr.,** formerly vice-president and assistant general manager of Reo Motors, Inc., has been elected president and general manager succeeding **Henry E. Hund,** who has been named chairman of the board. **James J. Dervin,** formerly vice-president and director of purchases, succeeds Mr. Sherer as vice-president and asistant general manager.

• **Malcolm C. Reed** has been elected vice-president in charge of sales, Dunkirk Radiator Corp., Dunkirk, N. Y., succeeding **Carl A. Sawade** who has been made head of the company's general sales offices in New York. **Robert E. Reed,** formerly assistant superintendent has been named secretary to succeed his brother and **Joseph N. Vandervoort** has been appointed purchasing agent.

• **John P. Dearasaugh** has been appointed head of the Aluminum Co. of America's gas properties in Texas, with headquarters at the new Alcoa reduction works now under construction at Point Comfort. The service inspection activities of the Castings Div., formerly handled by Mr. Dearasaugh, have been combined with the customer service activities of the Fabricating Div., under the direction of **John W. Hood** of the central metallurgical department, Pittsburgh office.

• **Hyman Iserson** and **Maurice E. Miville** have been named research chemists at the Whitemarsh research laboratories of Pennsylvania Salt Mfg. Co., Philadelphia. Mr. Iserson formerly worked as a research chemist for Frankford Arsenal and Rohm & Haas. Mr. Miville had formerly been associated with the Celanese Corp. of America.

• **H. S. Klingenstein,** who recently resigned as executive vice-president and director of Duquesne Smelting Corp., has become affiliated with Keystone Metal Co., Pittsburgh.

• **H. W. Knight** has been elected to the board of directors of American Zinc, Lead & Smelting Co., St. Louis.

• **Arthur R. Collins** has been appointed general manager of Division III, the "South Wind" heating equipment division of Stewart-Warner Corp. at Indianapolis. Mr. Collins joined the division in 1942 and has headed manufacturing and engineering activities. **E. G. Fossum** has been appointed assistant to the president of the corporation. Mr. Fossum has been a member of the organization since 1926.

• **L. G. Maechtlen** has been named general sales manager of the Square D Co., Western Div., Los Angeles. Mr. Maechtlen has served as works manager of the Valley Boulevard plant.

• **B. A. LeMonte,** formerly assistant roll engineer, Jones & Laughlin Steel Corp. Pittsburgh has been appointed roll engineer succeeding **Norman C. Rendleman** who has retired after 44 years with the company. Mr. LeMonte joined J&L in 1925.

B. A. LEMONTE, roll engineer, Jones & Laughlin Steel Corp.

Thomas R. Martin has been ap-ointed chief design engineer for orporacion de Fomento de la Pro-iccion (Chile). Mr. Martin had rmerly been connected with Na-onal Tube Co., Republic Steel orp. and Marion Power Shovel o. At present Mr. Martin is lo-ted in the New York office of the mpany. He leaves for Chile ortly after the first of the year.

R. C. Brown has been appointed les director for Foote Bros. Gear Machine Corp., Chicago. Mr. rown formerly served as south-est division manager for Link elt Co. and more recently, and til joining Foote Bros., he rved as president of the Brown-eele Co., Dallas.

E. S. Sensenderfer has been med advertising manager of onney Forge & Tool Works, Al-ntown, Pa. Previous to his con-ction with Bonney Forge, Mr. nsenderfer had been associated ith Foltz-Wessinger Inc., with e U. S. Asbestos division of Ray-stos-Manhattan, Inc. and Amer-an Trucking Associations, Inc.

William J. Hall has been ap-ointed production manager of the anhoe Div., Reliance Electric & ngineering Co., Cleveland. Mr. all joined Reliance in 1935 as a spatcher in the production de-rtment. He has been night su-rintendent of the Ivanhoe divi-on for the past two years.

ILLIAM J. HALL, production manager, Ivanhoe Div., Reliance Electric & Engineering Co.

• **Russell D. Ryker** has been promoted to assistant manager of quality control and **Louis J. Burkhart** has been appointed chief inspector for Bendix Home Appliances Inc., South Bend, Ind. Mr. Ryker has been in the quality control division since 1943. Mr. Burkhart formerly had been employed by Ingersoll Steel division of the Borg-Warner Corp.

• **J. I. Onarheim** and **R. T. Ward** have been assigned to the Milwaukee district office of Allis-Chalmers Mfg. Co. Mr. Onarheim has been a member of the company's central station and marine sales department for the last 18 months. Mr. Ward has been employed in the administrative office of the executive vice-president of the general machinery division for the past four years. **Jay Seefeld,** who formerly served the Tennessee Eastman Corp. at Oak Ridge for two years, has been named to the San Antonio office of Allis-Chalmers. **W. H. Sanford** has been assigned to the Houston district office. He had formerly been associated with Fort Worth Steel & Machinery Co. **A. Joseph Mestier, Jr.** joins the New York district office as petroleum sales representative. Mr. Mestier became associated with the company in 1946. **Robert E. Bender** has been assigned to the Grand Rapids branch office.

• **Frank L. Johnson** has been appointed division sales manager of the Osgood Co. and General Excavator Co., both of Marion, Ohio, covering the states of Washington, Oregon, California, Nevada and parts of Montana and Idaho, with his headquarters in San Francisco. Mr. Johnson had formerly been associated with American Wheelabrator & Equipment Corp.

• **Carl Eversole** has been appointed to the advertising agency staff of Charles F. Dowd, Inc., Toledo. For the past seven years Mr. Eversole had charge of industrial division advertising and publicity at Surface Combustion Corp.

• **Marcus Thau** has been named director of research, development and production, Metric Lacquer Mfg. Co. Inc., Irvington, N. J. Dr. Thau had previously been associated in a similar capacity with Lacquer & Chemical Corp.

RUSSELL MASSEY, superintendent of rolling mills, Atlas Steels Ltd.

• **Russell Massey** has been appointed superintendent of rolling mills, Atlas Steels Ltd., Welland, Canada. He joined the Atlas organization in 1941 as supervisor of the 26-in. and 22-in. mills, a position he has held since that time. Mr. Massey entered the steel business in 1932 with Weirton Steel Co.

OBITUARY...

• **Thomas R. Mullen, Jr.,** 28, vice-president, Lehigh Structural Steel Co. and Lehigh Construction Co., New York, died Nov. 16.

• **William S. Rogers,** 60, former president of Rogers, Brown Iron Co., now the Susquehanna plant of Hanna Furnace Corp., Buffalo, died Nov. 6.

• **John M. Prowell,** 58, president and owner of Avondale Stove & Foundry Co., Birmingham, died Nov. 10.

• **J. Henry Drury,** 86, founder and former treasurer of Union Twist Drill Co., Athol, Mass., died Nov. 6.

• **James D. Jones,** 67, vice-president in charge of engineering, H. A. Brassert & Co., New York, died Nov. 7.

• **Roger E. Hopps,** 50, director of purchases for GMC Truck and Coach Div. of General Motors Corp., Detroit, died Nov. 2.

European Letter . . .

• Success of ERP depends on Western Europe's ability to restore its own agricultural productivity . . . East and West patterns differ widely . . . Essential trade between the two must be revived.

LONDON—Western Europe depends largely on its own agricultural production. Even before the war imported food supplies accounted for only one-fifth of annual requirements at the most; if the United Kingdom were excluded, the proportion imported would be much smaller. Since the war, however, agricultural production in western Europe has been lower than it used to be. For the crop year 1946-47 it was estimated at only 75 pct of the 1934-38 level. Imports, moreover, have been restricted by payments difficulties. In all, consumption measured in terms of calories has been reckoned to be some 20 pct below the prewar standard. In the first two years after the war some relief was afforded by UNRA shipments; latterly it has been afforded by Marshall aid. But although the Marshall Plan provides for some expansion of food imports, the success of the recovery program in food depends on western Europe's ability to resuscitate its own agriculture.

The agricultural patterns of western and eastern Europe differ widely. In the west, agriculture takes second place to industry, but it is more highly capitalized, with a higher productivity per man and per acre than in the east. It specializes more on livestock products; it requires fertilizers and imported feedingstuffs in large quantities. In eastern Europe, it tends to be more primitive and is concentrated largely on grain production. If this pattern is to persist, it will be essential to revive trade between eastern and western Europe. Before the war, there were two dominant movements in the European trade in foodstuffs; first, the large scale shipment of wheat and other cereals from eastern Europe to the West and, second, the shipment of livestock products and fresh fruit and vegetables mainly from western Europe to Britain. The plan for European recovery assumes that both these prewar characteristics will be restored.

IN 1946-47, the acreage devoted to the main agricultural crops in western Europe was 8 pct lower than before the war, except for coarse grains, where the acreage was slightly larger than in 1934-38. The output of these crops, however, apart from sugar, was fully 10 pct below that of the prewar period, and the same was true of the livestock population. The numbers of cattle had regained their 1934-38 average, though those of sheep and pigs were 5 pct and 37 pct smaller, respectively. Output of milk products was down by 30 pct and of meat by 34 pct. The same trend was also evident in poultry; flocks were reduced by 20 pct while egg production was 34 pct smaller. These figures give some impression of the serious fall in agricultural productivity in Europe. Fertilizers were scarce during the war and soil fertility was seriously depleted. Farm equipment was worn out or destroyed. Labor in the occupied countries was drafted to Germany. Supplies of concentrated feedingstuffs for the livestock production were no longer available. Modern agriculture also depends on a host of other specialized materials such as improved seeds and insecticides, which were equally in short supply. This legacy of the war years had to be made good.

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BUT the production cycle in agriculture is lengthy; the simplest plans may take two or three years to materialize. F
livestock they take even longer.
at the end of hostilities there h
been an abundance of fertilize
farm equipment and feedingstu
and if agricultural laborers had
turned to their former occupati
recovery to the prewar level of o
put would still have taken at le
three years. But, instead of abu
dance, there were shortages. So
improvement was achieved in ag
cultural production in 1946, l
matters were made worse again
the severe winter of 1946-47 a
the summer drought which f
lowed, causing output in 1947
fall sharply. A serious reducti
in yields of arable crops has be
made good this year. But the sho
age of feed for livestock caused
reduction in numbers of cattle a
sheep, so that recovery was po
poned by at least two years.

Although total agricultural p
duction in western Europe m
perhaps, regain its prewar level
1950-51, the pattern of trade
foodstuffs between the particip
ing countries will alter appreciab
The United Kingdom expects to
less dependent on imported foo
particularly those at present
tained from the Western Her
sphere. Cereal and potato prod
tion, which was expanded consid
ably during the war years, will
reduced in favor of livestock p
duction, but the level aimed at v
still be 10 to 20 pct above prew
With livestock, the emphasis will
on milk rather than meat. Be
Denmark and the Netherlands
pect to resume their prewar expo
of meat and dairy products, s
mainly based on imported fo
stuffs; the Netherlands, howev
intends to switch from the exp
of butter to the export of che
and processed milk. Norway a
Sweden intend to expand agric
tural production for their domes
markets without attempting to
capture their prewar export tra
which was largely focused upon
British market, whereas Fra
plans to expand output from
smaller cultivated area. Such
the plans. Whether they are mu
ally compatible remains to be se

YET these plans, which fo
the basis of the European
covery Program, are dependent
their fulfilment on certain assur

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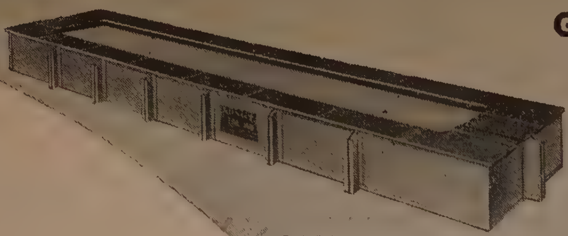
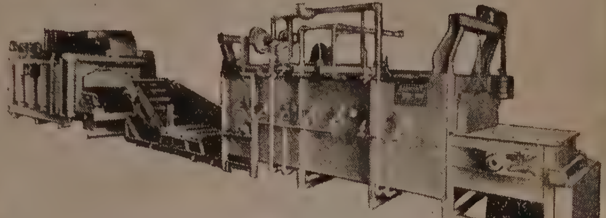
GAS • ELECTRIC • OIL


GALVANIZING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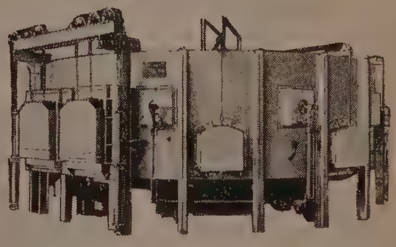
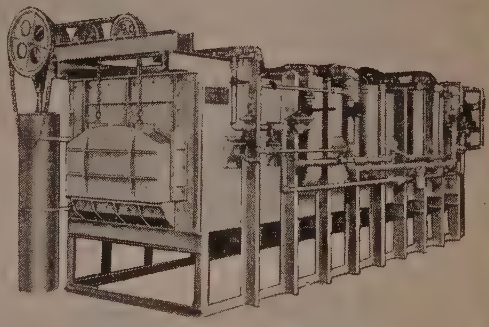

ROTARY HEARTH FORGE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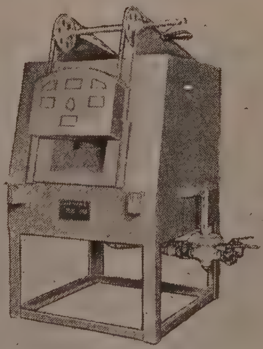
SEMI-MUFFLE AND FULL MUFFLE
OVENS

RECIRCULATING
FURNACES

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ain Office: Dept. 110, 4433 Ogden Ave., Chicago 23—*New York Office:* 322 W. 48th St., New York 19—*Detroit Office:* 3049 E. Grand Blvd., Detroit 2
Canada Factory: 321 Weston Rd., So., Toronto 9

tions. In the first place, they presuppose an adequate supply of agricultural raw materials—fertilizers, equipment, feedingstuffs, insecticides and seeds. Secondly, they presume the maintenance of East-West trade in Europe. Thirdly, they envisage development of agricultural production in colonial areas. These latter projects, so far as the United Kingdom is concerned, are well behind schedule, so that to this extent the targets laid down in the European plan may not be achieved. East-West trade is likely to continue in spite of the apparent worsening of political relations. Southeast Europe will still want to dispose of its grain surplus to western Europe in return for industrial equipment. Nevertheless, in the longer term, this basic assumption of East-West trade may be open to question, because the splitting up of large estates and the development of industrialization in these countries is likely to change their agriculture towards mixed farming and livestock and away from cereal production. Major changes of this kind might mean the destruction of the very basis of East-West trade in foodstuffs.

The most important assumption of immediate concern is the availability of fertilizers, farm equipment and feedingstuffs. Before the war, western Europe was a net exporter of nitrogen and potash but an importer of phosphates; in 1946, however, it was a net importer of nitrogen. The bulk of plant nutrients is obtained from farmyard manure and this source has been affected by the decline in livestock numbers. Consumption of commercial fertilizers at present is probably at the prewar level, but Europe, nevertheless, plans almost to double its output of fertilizers by 1950-51 and most of that will be consumed domestically. But the future level of fertilizer production depends on industrial plant, coal and electricity, and it is doubtful whether production can be increased at the anticipated rate. Europe is not short of phosphate; the small import requirement is due to the relatively restricted capacity to manufacture superphosphate—the raw material, phosphate rock, is in plentiful supply and readily available in North Africa. Western Europe, however, is not so well supplied with potash. The only important sources are France and western Germany, but the latter's output is used entirely for its own needs. Imports could be obtained from eastern Europe (in particular the Soviet zone of Germany), Spain and Palestine provided that trade is maintained with these countries.

No less important than fertilizers is the supply of agricultural machinery. There has already been a marked expansion in the mechanization of Western European agriculture, but requirements of tractors are expected to be three times their prewar level by 1951. If the plans materialize, western Europe will have a sizeable export surplus of tractors—although it will still be necessary to import small quantities of heavy tractors—while import requirements of other machinery in 1950-51 are estimated at 543,000 tons compared with an export surplus of 390,000 tons. Britain must be the mainstay of this increase in production of agricultural equipment. It has already achieved a remarkable rate of increase in production of tractors and agricultural machinery, and exports have been maintained at a high level. But the future plans depend largely on sufficient steel. If supplies of steel for farm equipment were curtailed, the future of Europe's agricultural recovery would be in jeopardy. Criticism has already come from the United States that the projected increase in mechanization is too great.

BUT given the present scarcity of agricultural labor in all countries of western Europe except Italy, increased supplies of agricultural machinery are essential to raise agricultural productivity and to replace the loss of draught animals since 1939.

Western Europe's agricultural recovery program depends on increased livestock production. Hence it requires an expansion in the supply of feedingstuffs and, in particular, of concentrated feeds. The Food and Agriculture Organization has recently estimated that in 1946-47 the supply of concentrates in the principal countries of western Europe was less than two thirds of the prewar level, and that the supply of all feeds was 85 pct. The shortage of bread grains, the higher extraction rate in flour milling, and the use of certain coarse grains for human consumption have led to a further shortage in the supply of feedingstuffs. During the current season there will
certainly be a sufficiency of brea
grains and coarse grains. But th
improvement is likely to benef
only egg and pork productio
Cattle and sheep are more d
pendent on oil-cakes, and not eve
the most optimistic estimates e
pect the world supply of oils an
fats to regain its prewar level b
fore 1951, if then. There has, c
course, been considerable develo
ment in improving grassland
grass drying and silage which ha
helped to increase indigenous su
plies of animal food. Nevertheles
farmers will have to be assured c
a more enduring increase in th
supply of feedingstuffs before the
can be encouraged to expand the
livestock herds to the required e
tent.

This year's favorable crop
therefore will increase the amou
of food available for human co
sumption in western Europe. B
they are unlikely to contribute d
rectly to agricultural recover
There is always scope for bette
farming methods, better seeds, an
other technical improvements, b
basically agricultural recovery d
pends on an expansion in industri
output. This relationship is ve
close. It implies that agricultu
must be assured of increased su
plies of fertilizers and farm equi
ment; it also implies an expansi
in consumer goods and a gener
improvement in the economic healt
of western Europe. It is one thin
to expand agricultural productio
it is another to ensure an eff
cient distribution of the goods pr
duced. Ration schemes and gover
mental regulations help, but th
only certain method of securing
proper distribution is by making
profitable for farmers to exchan
their produce for the goods th
want.

Approves French Funds

Washington

• • • **Use of nearly** 8 billi
francs from the French counterpa
funds for mining reclamation a
improvement has been approved
the Economic Cooperation Admini
tration.

About a third of the total will
used for purchase of new pla
equipment, divided equally betwe
pit and surface mines. Also, near
1.9 billion from the fund will
expended on mining power projec

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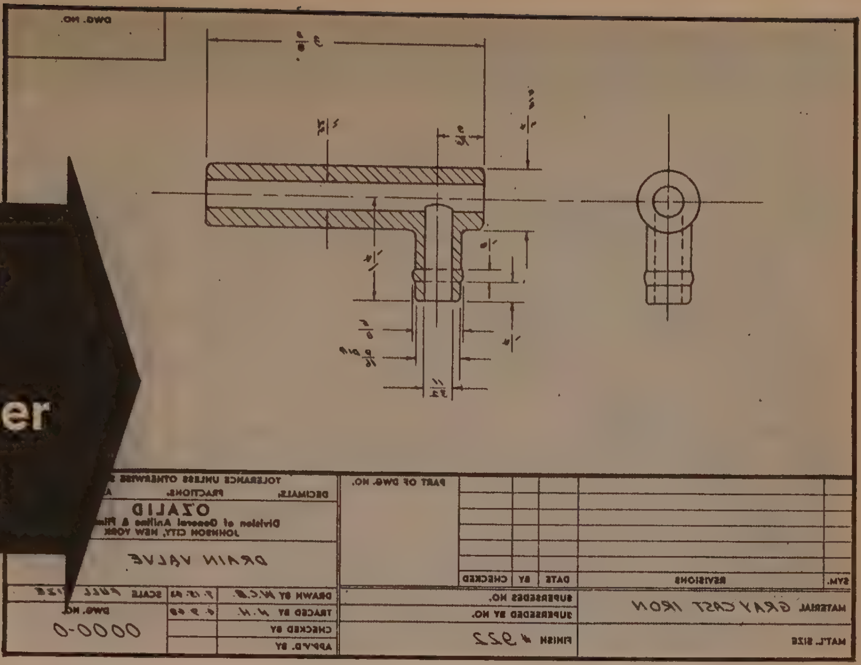

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Industrial News Summary...

- ***The Word Capacity Is Overrated***
- ***Actual Production Tells Story***
- ***Steel and Power Neck and Neck***

THE word capacity has been highly overrated. What it means lots of times depends on who is using it. It has caused the steel industry no end of trouble. It has furnished some government high binders ammunition for any and all purposes. But mere capacity figures alone mean nothing unless "what we have is used."

Production is the real story. It has been hampered in the steel industry during the past 3 years by strikes, labor shortages, iron shortages, coal shortages, scrap shortages, occasional leadership shortages and what all. Slowly the industry has caught up with each of these blocks standing in the way of full production. Whether it can continue at the present high rate and not be subject to serious spot emergencies is hard to tell.

But steel is now being turned out at a rate which ought to go a long way next year toward taking steel people off a perennial barbecue spit. At least this is what sales people hope for, pray for and live for. Three years of needling has been almost too much for present heads in the industry.

A major hurdle steel has faced has been electric power. Thanks to some outlandish gyrating in changing schedules, plants, product-mix and a few other things, power shortage has not yet seriously cut steel fabrication or output. But it has been—and is—a headache.

The power shortage in steel is like the steel shortage. More is being produced than ever before but not enough to satisfy all consumers in the steel and fabricating groups. The power shortage in steel has been spotty. It is a geographical problem and at times a paradox.

In the Pittsburgh district power has been a short item with steel mills. But close to that center power is no problem. Two Navy-owned steel furnaces, idle since the war, were down because there was not enough power—in that location—to run them. They have been moved. Not far from where they were. And they are now a factor in higher steel output.

SHEER ingenuity and cooperation have prevented the nationwide power shortage from interfering seriously with steel production and fabrication as it has seriously cut into aluminum production. Three areas that can't always meet peak demand are Pittsburgh, Cleveland and Chicago.

In Cleveland a rationing program is in effect to cut industrial power consumption at peak hours. Parts of Pittsburgh will come under a similar plan the first of December. It has worked quite well in Cleveland because industry there has been able to figure out ways of shifting power loads to off-peak hours. Steel mills, for instance, try to schedule their operations so that the big mills are down for roll changes during the top-demand hours.

Some electric furnace production was lost in the Pittsburgh area last winter when the power companies there were forced to call upon their electric furnace customers to cut operations on short notice. It was possible to avoid spoiling any heats but some were delayed.

Because of the difficulty of rescheduling a few finishing mills now running a full three turns a day, it is likely that a little finished steel may be lost in the Pittsburgh district because of next winter's power cuts. However, the probability of curtailments due to natural gas shortages are going to make it hard to tell what caused what losses. Some stockpiling of semifinished steel appears possible. If so, it will be on a limited scale and is expected to build up stockpiles behind the mills to the point where steel mill operating men would like to have them for efficient operation.

The probability of more than 92 million tons of steel ingots being turned out next year—barring strikes—is not much help to steel consumers today. But it may be the answer to a lot of steel shortage questions today. One thing seems certain; if steel is as short by the end of 1949 as it is now there will be more fireworks over the capacity problem than the industry has seen yet.

Steel output this week stays at 99.5 pct of capacity Mild weather in the Middle West and East can be given a lot of credit for top level output.

BEHIND the steel shortage is a critical pig iro supply picture that gets no better. Conversio deals are often supported by a supply of a pig iro obtained after long arduous planning. But just a often after the pig iron is found for the steel, anothe shortage shows up in ingot molds. Tight pig iron supplies have mold makers frantic at times. The steel i often in sight with no molds to pour it in. So it goes If several links in the steel supply picture ever brea down at one time it would be bad—for supplier an customer.

Aluminum producers, hard pressed by domestic demand and stymied by power shortages, are aghast a the large tonnages of foreign aluminum and aluminu scrap coming into this country from Marshall Pla nations. What burns them up is that the imports ar made possible by ECA shipments of Canadian aluminum at prevailing prices paid for in American dollar The imports are sold to consumers here at gray marke prices ranging from 50 to 70 pct above the domesti level.

GALVANIZED EXTRAS JUMP—Because extras ased on zinc prices above 15c per lb are not printed, the llowing Carnegie-Illinois Steel Corp. extras are listed, ased on Prime Western zinc at 17½c per lb. Galvanized at sheet, **gages: 9 to 14,** 33c; **15 to 23,** 65c; **24 to 27,** 98c; **3 to 32,** $1.39. Galvanized flat sheet, heavy coatings, add 0 pct to extra for coating stipulated. Culvert sheet, 2 oz iple spot test, add 78c to gage price. Roofing and siding uality, extras per square, **gages: 24 to 29,** $1.03; **22,** $1.17; **3 to 20,** $1.30; **16,** $1.88. Major pipe producers have gene- lly added $4 a ton to galvanized pipe and tubing prices, flecting the recent zinc price boost.

EXTRA DIVIDENDS—National Steel Corp. declared s usual third quarter dividend of $1 a share plus a year- nd extra dividend of $1 a share. In addition, the company hich operates Weirton Steel Co., Great Lakes Steel Corp., lanna Furnace Corp. and Hanna Iron Ore Co. declared a) pct stock dividend.

BASING POINT CHANGE—There is one, but not in ne United States at this time. Algoma Steel Corp. has hanged its basing point for pig iron prices from Montreal nd Toronto to Sault Ste. Marie, Ont. Under this new price lling consumers are faced with the freight charges which ould bring the price to Montreal and Toronto melters pproximately $5 per ton above previous levels.

ARMCO SHEET BOOST—Armco Steel Corp. has aised the price of its cold rolled electrical sheet in the ranco grades by $20 per ton.

ORE MORE ORE—Reflecting new blast furnace capac- y, consumption of Lake Superior iron ore by U. S. and anadian blast furnaces soared to 7,398,055 gross tons in ctober. This is the highest monthly consumption this ear. It raises the 1948 cumulative consumption to 66,220,- 48 gross tons, according to the Lake Superior iron ore ssociation's monthly report. On the basis of these figures is estimated that Lake Superior ore consumption this ear will be about 81 million tons. Also it is expected that otal ore consumption this year will run to 98 million gross ons or more.

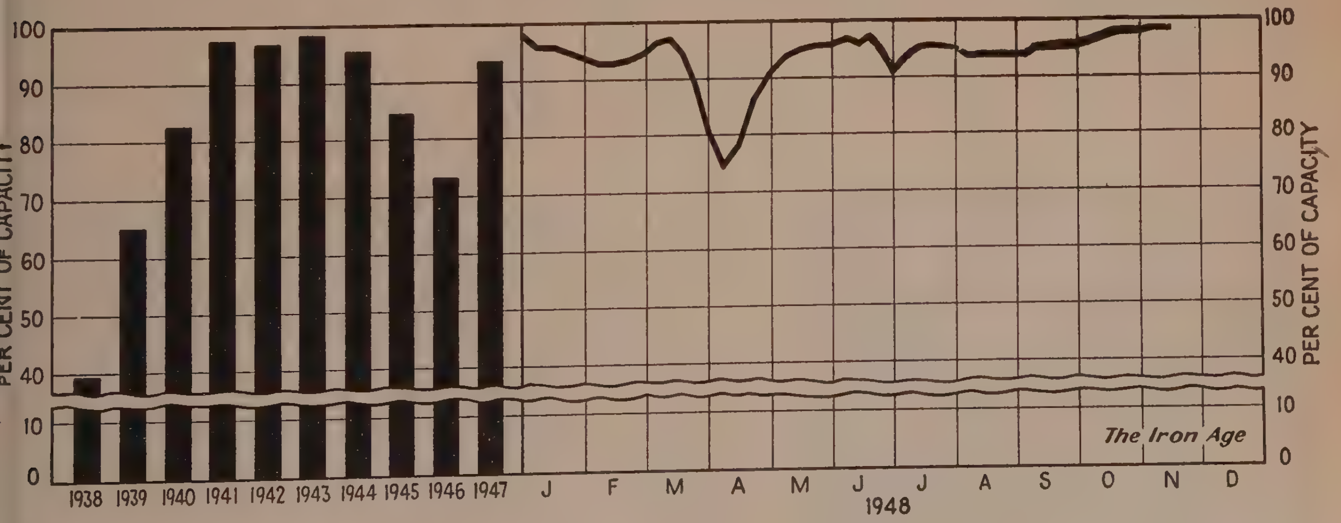
• **REPUBLIC EXTRAS**—Republic Steel Corp. has made a readjustment of size and processing extras on hot rolled sheet and strip and processing extras on cold rolled sheet and strip because of increased manufacturing costs. In some cases these are the first adjustments on these charges to be made in 15 years. Hot rolled processing extras have been increased from 0.1c to 0.25c per lb on sheet and strip. Size extras on hot rolled sheet are up about 0.15c and strip slightly over 0.5c per lb. Increases in processing extras on cold rolled sheet and strip vary between 0.1c and 0.25c per lb.

• **KAISER'S INTEGRATION**—Kaiser-Frazer has dug deep for $3.6 million for an important buy to them—the Phoenix-Apollo Steel Co. at Phoenixville, Pa. This purchase is another move by Kaiser in its constant effort to get enough steel for its automobile manufacturing operations. The purchase includes 6 openhearths, a blooming mill, 2 finishing mills and a structural mill which in all produces about 26,000 tons of steel products monthly. A new corporation will be formed to operate the plant, but present management will retain supervision. David Thompson who is now president of Phoenix-Apollo will be the head of the new company when Kaiser-Frazer takes over on Dec. 31.

• **GRANITE CITY SHEET UP**—Granite City Steel Co., Granite City, Ill., has raised the base price of cold rolled sheet $10 a net ton effective Nov. 16. No adjustment in extras was made. This now makes the base price for this mill $4.70 per 100 lb.

• **ON YOUR OWN**—Purchases of German iron and steel scrap will have to be undertaken by U. S. firms on an individual basis, the Commerce Dept. decided this week. Secretary Sawyer, in announcing the government's decision, said that the proposal to set up a government scrap-buying corporation were not without merit. But uncertainties have developed, he said, as to the extent to which the military government in Germany could participate in a pooling arrangement. Furthermore, he added, the Justice Dept. has raised the question of possible antitrust law violation. Sawyer said he hoped that under the individual buying agreements which now have the green light, substantial quantities of scrap will move here from Germany.

Steel Ingot Production by Districts and Per Cent of Capacity



Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
ov. 16........	99.5	89.5*	94.0	97.0	102.0*	105.0	98.0	102.0	104.0*	100.0	110.0	82.5	109.0	99.5
ov. 23........	99.5	98.5	94.0	98.0	98.0	105.0	101.0	102.0	102.0	102.0	107.0	82.5	112.0	99.5

* Revised.

MORE STEEL COMING FOR DSC CUSTOMERS

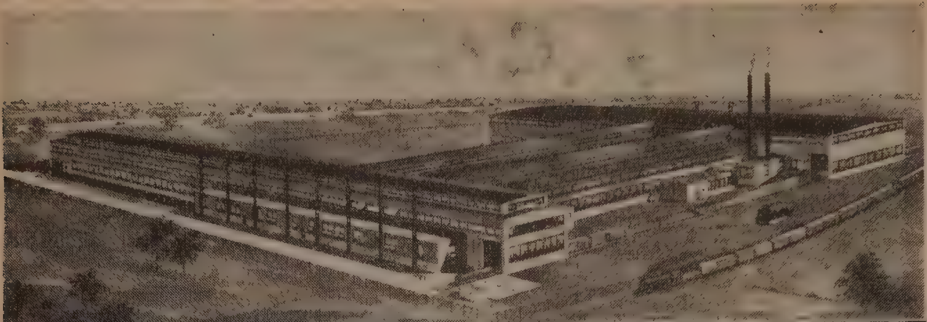


ILLUSTRATION BASED ON RECENT PHOTOGRAPHS

DETROIT PLANT—

Improvements in existing facilitie . . . and installation of new equipment . . . will step-up producing capacity here to 150,000 tons . . . increasing the supply of cold rolled strip by about 35,000 tons a year . . . to D S C customers in this area.

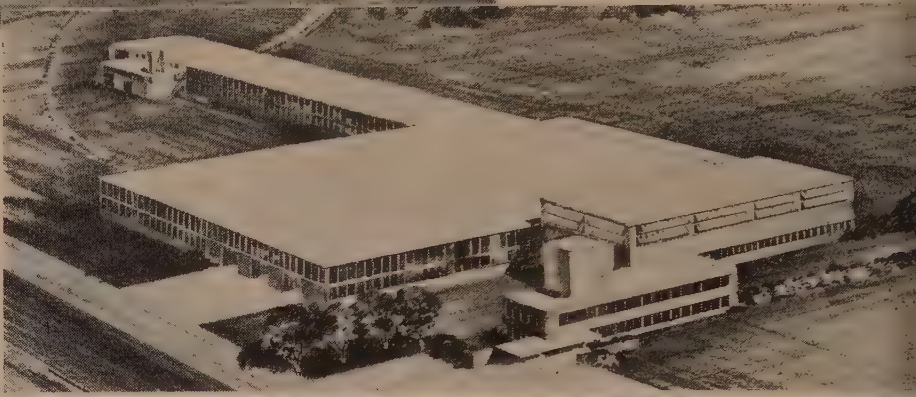


ILLUSTRATION BASED ON ARCHITECT'S CONCEPTION

NEW EASTERN PLANT

A new cold rolled strip mill at New Haven, Conn. . . . in the final stages of construction . . . will make available to D S C customers in this territory additional producing capacity of 60,000 tons a year . . . practically at their stock room doors.

Dependable Dan Our Customers' Man Invites Correspondence Regarding Your Normal and Regular Requirements

Frankly, we may be unable to accept new business now, but looking ahead, we would like to keep you informed about our expanding facilities.

Here Is Cold Rolled Strip Steel Producing Capacit Of Over 200,000 Tons A Year

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PRODUCERS OF
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★ ★

CRAINE-SCHRAGE STEEL DIVISION

DISTRIBUTORS AND DIRECT MILL REPRESENTATIVES

Warehouse and General Office: 8701 Epworth Blvd., Detroit 4, Mich.
Sales Offices: Grand Rapids, Toledo, Indianapolis
Products: Cold Drawn and Hot Rolled Carbon and Alloy Steel Bars . . . Tool Steels . . Drill Rod . . . Wire Rope, etc.

teel Centers Skating On Thin Ice Of Electric Power Shortage

ttsburgh

• • **Three of the** biggest steel nters in the country are skating the thin ice of an electrical wer shortage. Pittsburgh, Chi- go and Cleveland are the sore ots. So far it has caused very tle loss in steel ingot output and rtually no loss in finished steel. ut Pittsburgh may lose a little ished steel this winter and some mifinished steel may be stock- led. Electric furnace operators ere will probably be asked to ake occasional operating cuts for riods of a few hours as they ere last winter.

The power shortage is like the eel shortage in one respect. More ectricity is being generated to- y than ever before but there still not enough to satisfy everyone. differs in one respect—there is ough power if it could be spread t. That is the objective of most ans to tide industry over this inter, when the shortage will be orse than it has ever been in ese areas.

To meet this demand the electri- l industry is expanding at a ter- fic rate. It is committed to spend .5 billion a year for the next 4 ars on new equipment. General- speaking, the winter of 1949- 50 is expected to be easier than e coming winter, at current ex- nsion rates for electric produc- s and users, but the industry es not expect to be fully out of e woods until 1953. By then it is lieved there will be a healthy argin of capacity over expected mand.

Cleveland industry is now oper- ing on a 15 pct voluntary reduc- on in industrial power. That part the Pittsburgh district served Duquesne Light Co. will come der a similar plan from Dec. 1 to ar. 1. Chicago has no across-the- ard reduction but big users ere are prepared to make quick ashes in power use when the sys- m load goes too high. This prac- ce is also used for the remaining rtion of the Pittsburgh district rved by West Penn Power Co.

n Chicago, Industrial consumers y heavy charges if they use more an an agreed-upon normal load

Some Cuts Ahead But Utilities Have $6 Billion Worth Of New Power on Order

° ° °

By GEORGE F. SULLIVAN
Pittsburgh Regional Editor

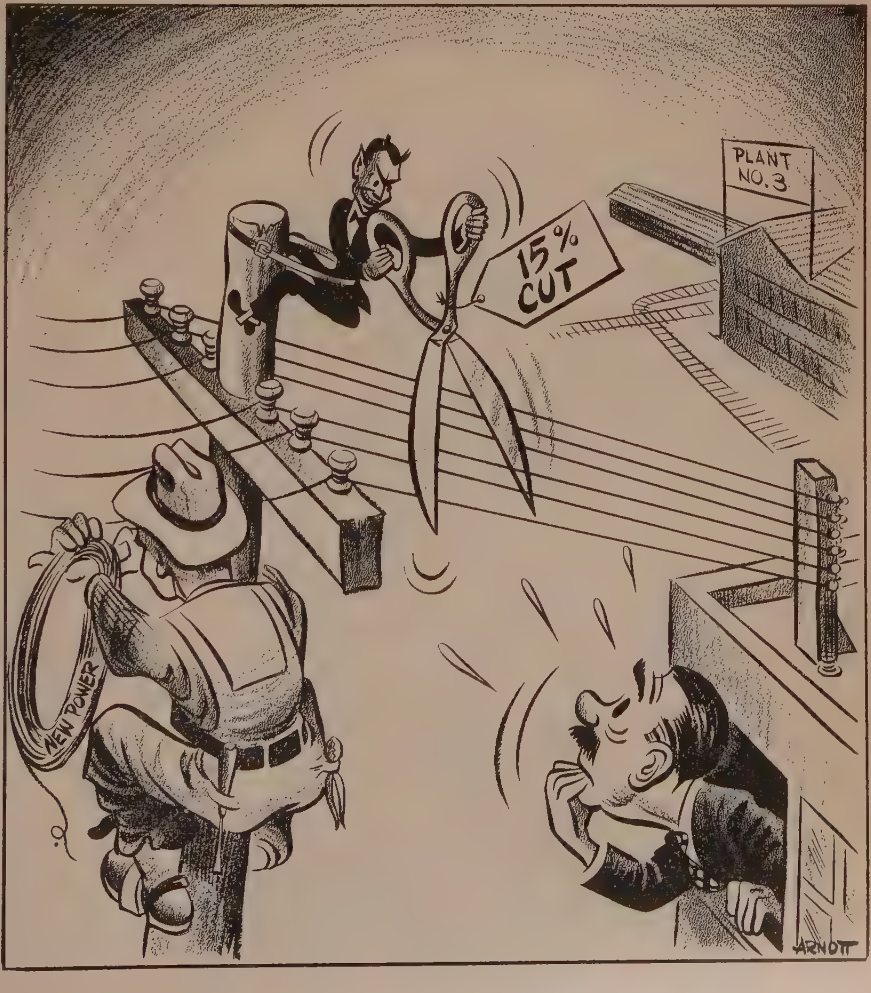
° ° °

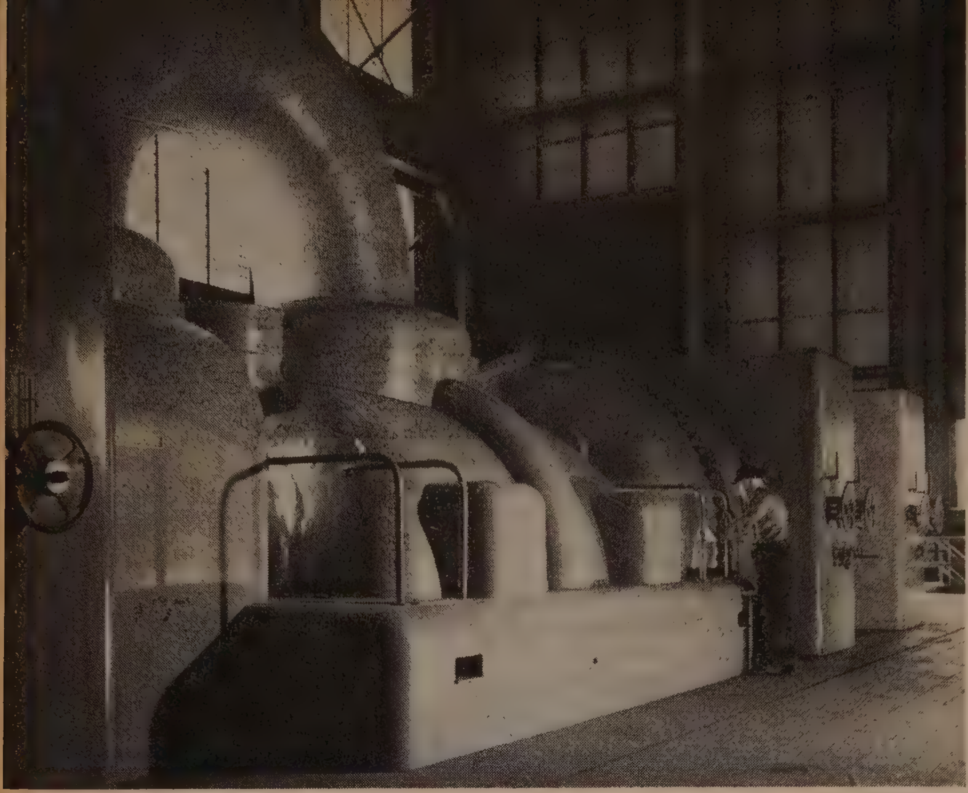
during peak hours. Conversely, they get a break on overall rates if they cut their requirements at these peak hours.

Some Pittsburgh industrialists are concerned about the cuts they will make—or take—beginning Dec. 1. Like those in Cleveland, they have agreed to reduce their power demand by 15 pct during the daylight peak hours. In Cleveland these are 8 a.m. to 8 p.m.; in Pittsburgh they are 8 a.m. to 9 p.m.; Monday through Friday in both cases. From information gathered to date it appears that the reduction will be bothersome but not serious in its effect on production at most plants.

It will be bothersome because in some fabricating shops it will require rescheduling certain operations to off-peak hours; transferring men from the day to the night shift. But at some of the very big plants this will mean a change in schedule of only a handful of men. Night shift and weekend operations will be stepped up in some shops, old standby generators will be cut in. Steel mills in Cleveland make roll changes during the day-

Pittsburgh MINUS





POWER ADDITION: *This 81,250 kva Westinghouse turbine generator is the newest unit in the West Penn Power Co. system which supplies part of the electrical power for the area around Pittsburgh. The company has another new unit like this one due to be running soon.*

light hours and it is said that no production has been lost there.

Prior to the 15 pct power cut—or "Cooperative Power Load Shift Program"—in Cleveland peak consumption occurred at 10 a.m. Monday through Friday. After the new program went into effect three peaks emerged: 10 a.m., 2 p.m. and 7 p.m., none as severe as the previous 10 a.m. peak.

As in Cleveland, the 15 pct cut will be "voluntary" in Pittsburgh. There have been a few threatened holdouts. To the question, "What if I don't go along?" one answer was that widescale lack of cooperation would threaten to unbalance the system. Engineers would then pull central station switches without warning and no one would know when power would again come on.

The probability of natural gas shortages for industry in these areas this winter makes the electric power shortage loom less threatening. Plants hampered by a gas shortage won't need the power they otherwise would use.

The shortage of electrical power, like the shortage of almost everything else, stems in part from delayed construction induced by the war. But on top of this there has been a tremendous increase in "normal" demand for electric power by individuals, commerce and industry. New industrial processes have increased demand, too.

The war deferred production of generators, transformers and other equipment. After it the orders hit equipment manufacturers in a bunch; some were late, too. Result: not enough capacity when the load is on full. And it takes 30 to 36 months to get delivery on a big turbine generator, about the same time for a large transformer.

The steel industry now uses more electricity per ton of production. So does every other major industry. Specifically, it takes at least 20 pct more electricity to make a ton of steel today than it did before the war. More, bigger and faster cold-rolling mills and wider use of electric furnaces are among the reasons.

So much for some of the reasons there isn't enough power in these steel centers to take care of all comers at any time. What are the future prospects? In Chicago, Commonwealth Edison, major supplier there, is embarked on a $400 million expansion program which will add 600,000 kw to its present 2.4 million kw capacity by 1952. Cleveland Electric Illuminating Co. is spending $127 million on a program that will put a 90,000-kw generator in next May and another in September. Its presen industrial capacity is 600,000 kw Two 75,000-kw units will follow one in 1950 and another in 1951 In Pittsburgh, Duquesne Light i spending $80 million on two 81,250-kw generators and allie equipment, one due in Novembe of 1949 and another a year later West Penn Power Co., the othe utility in the district, has recentl installed an 81,250-kw unit an hopes to have another in operation in about a month.

In the nation as a whole, installed capacity will go from 5 million kw on Jan. 1, 1940, to 7 million on Jan. 1, 1949. From tha time until Jan. 1, 1953, the $6 billion which utilities are committe to spend will boost capacity t about 95.5 million kw. This mean a doubling of capacity in 13 years

A spokesman for Clevelan Electric Illuminating Co. said th company does not fear installatio of new electric furnaces or ne plants moving into the area. B the time new furnaces were installed or new plants built CE will have enough additional capacity installed and operating t take care of the load. The Chicago story is about the same.

Pittsburgh's situation is a littl different. Electric furnace customers of both utilities there hav had to cut their load on very shor notice to save the systems. Tw 50-ton electric furnaces on th Duquesne Co. lines have not bee operated since the war because o insufficient power. These are th Navy Ordnance furnaces whic will be installed at Allegheny Ludlum's Brackenridge plant nex year. With two new ones on orde the Brackenridge plant will increase the load on the West Pen Power System about 60,000 kw but capacity will be available b for the 1949-1950 winter peak t care for them.

Companies moving into parts o Pittsburgh served by Duquesn Light, including the new Fishe Body plant, have been assure that there will be power enoug to supply them by the time the are ready for it. But it will sti be a close squeeze there until th fall of 1950.

The big manufacturers of ele trical power equipment, Gener Electric and Westinghouse, hav substantially increased faciliti for this work but are sti swamped with orders. This ye estinghouse will deliver steam rbine generators with a total of ice the capacity delivered in any ewar year. By 1951 it will be le to ship three times the ca- city shipped in any prewar year. neral Electric has orders for am turbine generators with a pacity of 9.5 million kw for de- ery over the next 4 years.

Market research men at both mpanies say there are a lot of nerators running today that uld normally be scrapped or re- ed to standby. They predict a od market for this type of equip- nt for the next 8 to 10 years at st. Tomlinson Fort, central tion salesmanager for Westing- use, estimates the total expendi- res of public utilities for new nerating and distributing equip- nt over the next 10 years at $16 lion.

Manufacturers of electrical wer generating and distributing uipment bought 1,264,952 tons steel in 1947. The 1948 figure ll be higher. Electrical power nsumption today is double what was a decade ago. Under normal siness conditions that demand ll double within the next dec- e. In money this means the ctrical utility industry will ve to double its investment dur- the next 10 years. For steel npanies this looks like a fairly iable source of continued busi- ss.

ew Agitator on Market

tsburgh

• • **The Engineering &** Con- uction Div., Koppers Co., Inc., s signed an agreement with Dr. onislaw Goldman, Pittsburgh nsulting engineer, whereby it will able to furnish the Goldman itator for chemical or other in- strial plant installations.

The company states that the ldman agitator, recently patented America, works on a new prin- le which is so efficient that mix- or washing time of chemicals reduced materially.

The agitator is so constructed t it propels liquid to the sides of tank and upward. At the top, liquid is drawn to the center ere it is pulled downward ough the hollow axis upon which agitating blades are fastened. is expelled from the bottom of s hollow axis to repeat the proc- . Several installations of the tator are now being made.

Allots $37 Million For Chinese Reconstruction

Washington

• • • **The Economic Cooperation** Administration last week made provisional allotment of $37 million as part of the proposed $70 million reconstruction and replacement program for China.

Approximately half will go into rehabilitation of Chinese coal, tin, antimony and other mines. The remainder will be used to restore communication and transportation and to reconstruct chemical and fertilizer plants.

Included among the projects are tin and antimony mines in south and southwest China, $2 million; tin, antimony and tungsten pits in south central and southwest China, $500,000; and the Hwainan, Nanking and Kaokeng coal mines, $8 million.

Ford Finishes Factory

Stockholm

• • • **Ford's new factory** here is now completed. It will have a production capacity of 15,000 vehicles a year.

Since the factory is not allowed to import motor-car parts under Sweden's new and sharply reduced import program, the plant is unable to start full production and some workers have been laid off.

General Motors (Sweden), hampered by the same import restrictions, have laid off over 800 of their 1,440 employees.

Profits Up; Authorize New Coal Washing Plant

Youngstown

• • • **Net profit of** $7,306,000 for the third quarter of 1948 was reported by Youngstown Sheet & Tube Co. This compares with $5,609,764 for the second quarter of 1948 and $4,817,698 for the third quarter of 1947.

Net sales and other revenue for the quarter amounted to $96,576,674, while cost of sales and other operating expenses amounted to $79,040,124. The company allowed $2,789,190 for depletion of minerals and depreciation of plants; $1,500,000 for contingencies; $234,360 for interest on funded debt and other interest charges and $5,707,000 for federal income taxes.

Directors have authorized construction of a new coal washing plant at its coal mines in Dehue, W. Va. The plant is to be completed next summer.

URANIUM RUSH: *Robert Campbell, Toronto mining man who discovered pitchblend ore rich in uranium along the eastern shore of Lake Superior 70 mi north of Sault Ste. Marie, Ont., attaches government plates to his claim stakes. Strike has started a rush of prospectors to the area.*

Industrial Briefs . . .

• **Visitors** — Messrs. W. H. Stratford, G. Wilson, G. D. Whitehouse and H. Cowlishaw, of the English Steel Corp., Ltd., Vickers Works, Sheffield, England, have recently arrived in New York. They are visiting manufacturing plants in the United States and will return to England about Dec. 10. Their headquarters are at A. Milne & Co., 741 Washington St., New York.

• **Open House**—More than 3000 visitors attended the open house held recently at the new million dollar warehouse of Korhumel Heffron & Preiss Steel Co., Evanston, Ill. The new warehouse contains 100,000 sq ft entirely under crane and has greatly increased facilities for slitting, shearing, roller leveling, etc.

• **Proposes New Lab**—A new laboratory building for metals processing studies is among the projects proposed in a $20 million development program announced recently at the Massachusetts Institute of Technology, Cambridge, Mass. One of the principal units of this laboratory will be a modern machine tool laboratory.

• **Centennial**—C. G. Hussey & Co., Pittsburgh's only copper rolling mill and one of the oldest companies in the region, celebrated its one hundredth anniversary recently.

• **Acquisition** — Stewart-Warner Corp., Chicago, has purchased the Heating Research Corp., Anderson, Ind., producers of the Saf-Aire gas heater. Production, marketing and other operations of the new business will be integrated with the South Wind Div. of Stewart-Warner at Indianapolis.

• **Weldrod Agents** — Ampco Metal, Inc., Milwaukee, has appointed Welder Service Co., 2037-41 Canton St., Toledo, as distributor for their complete line of rods.

• **Galvanizing Patent**—Rheem Mfg. Co., New York, has been awarded a patent covering the company's unique method of assembling zinc coated containers after galvanizing, a procedure which governs the company's entire mechanized process of tank manufacture. Other patents applied for refer to the complete system of automatic conveyerized galvanizing, as developed by Rheem.

• **Engine Order**—An order for the production of 100 steam locomotives, amounting to approximately $14 million for the Indian Government Railways has been placed in Canada. Sixty locomotives will be built by Montreal Locomotive Works, Ltd. and 40 by Canadian Locomotive Co., Ltd., Kingston, Ont. Payment will be made in U. S. dollars.

• **Opens New Lab**—The formal opening of the new Hanson-Van Winkle-Munning electrochemical laboratory at Matawan, N. J., was celebrated last week. The three-story laboratory was erected for the sole purpose of carrying on experimental and service work in the electroplating and polishing field.

• **Buys Coal Mine**—Pittsburgh Plate Glass Co., Pittsburgh, has acquired controlling stock interest in the Midvale Coal Co., Midvale, Ohio. The coal company is being liquidated and its mine will be operated as the Columbia Coal Div. of Pittsburgh Plate Glass Co.

• **To Represent**—Bedford Tool & Forge Co., Bedford, Ohio, has named Milwaukee Chaplet & Mfg. Co., 1023 S. 49th St., Milwaukee, as exclusive representative in the state of Wisconsin and western Michigan, to handle their line of chipping chisels.

• **Leases Plant**—General Electric, Schenectady, has leased from the War Assets Administration the former Remington Rand plant in Johnson City, N. Y., to manufacture special equipment for the Air Force.

All Time Record Seen In Open Market Scrap Consumption in U.S

Washington

• • • **Consumption of** purchase or open market iron and steel scra in 1948 will set a new high recor at about 29 million gross tons That is the prediction of Edwin C Barringer, executive vice-presiden of the Institute of Scrap Iron & Steel, Inc., Washington.

This would be 15 pct greate than the all time record of 26 million tons, established in 1947. I would be a third larger than th wartime peak of consumption.

"Based on Bureau of Mines statistics, the melt of home or intraplant scrap this year will barely exceed the 28 million gross tons o last year, while pig iron will d well to equal the 52 million tons o 1947. It is purchased scrap that i making possible record steel mil operating rates."

Of the 29 million gross tons o purchased scrap that will be melte this year to make new steel an castings, about 7 million tons wil be the waste of manufacturing operations and 4 million tons will b provided by the railroads, according to Mr. Barringer. The remaining 18 million tons will come fro auto wrecking yards, farms, wrecking operations, collectors, demolition, shipbreaking, and othe sources. Imports, principally fro Germany, will account for abou 300,000 tons.

In addition to melting recor breaking tonnages of scrap, stee mills and foundries have put abou 1 million tons into inventory thi year, he declared.

Destroyed Plant Replace

Liptonville, Tenn.

• • • **A new soybean** oil solven extraction plant was started her about the middle of November b the West Tennessee Soya Mill Co The new plant replaces the firm' expeller mill which was destroye by fire earlier in the year. Allis Chalmers Mfg. Co. of Milwauke completely engineered the 150 to per day plant. Allis supplied th equipment, including machiner for bean preparation, oil extraction, solvent recovery and mea conditioning.

hester Furnace to Resume Output of Basic Iron By End of Month

hester, Pa.

• • **The old Chester** blast fur-
ıce will be back in production
ain at the end of this month
roducing about 400 tons of basic
on a month from foreign ores
d beehive coke. It will be oper-
ed under the name of Allied
on Works, Inc., Chester, a cor-
ration whose ownership is held
the extent of 75 pct by Stano-
d Oil & Gas Co., Tulsa, Okla.,
subsidiary of the Standard Oil
. of Indiana. The remaining
are of the company is held by
own Engineering Co., Houston,
x.

Rehabilitation of the furnace,
w being rushed to completion
H. A. Brassert & Co., New
rk, is expected to reach about
million, exclusive of the cost of
ventories of raw materials. This
st, much higher than originally
ntemplated, has been swelled by
rge expenditures for two used
ilers, a pig casting machine,
ck repairs and dredging, and
ant transportation equipment
d cranes. The rehabilitation cost
estimated to approach half the
st of establishment of a new
rnace of the same capacity. But
terials are not available to per-
t new construction.

The anticipated 400 ton a day
oduction rate is higher than
er reached before by this fur-
ce. It will be obtained largely
rough the use of carbon blocks
a thinner lining up to the
ntle, a new departure in fur-
ce construction. By this means
diameter of the hearth has
n increased from 14 ft 6 in. to
ft 9 in. In addition, the bosh
s been made steeper. The pre-
us bosh construction, said to
ve been too flat, is reported to
ve reduced the wind, cut pro-
tion of iron and caused break-
s of metal in the hearth.

here has been a furnace at
ester since 1880. Until about
1, it was operated as the Dela-
re River Steel Co., but re-
ined idle for the next 10 years.
ly in the war the government
ipped it as a ferromanganese
ducer and spent slightly over
million in the process. How-
r, it never went into production of ferromanganese. For 18 months, to the end of 1943, it produced basic pig iron as the Pittsburgh Ferromanganese Co. This company reached a maximum production of some 350 tons a day using as much as 25 pct of scrap in the charge. Under the ownership of the Delaware River Steel Co., foundry iron production averaged 275 to 300 tons a day.

Chester furnace currently undergoing repairs.

When the Brassert staff began its reconstruction operations, a great many unexpected difficulties were encountered. Underground piping was found all over the property, but there was no plan to designate its location. There had been little or no plant maintenance work since the furnace went out of production. All equipment was in very bad shape. Water entered the plant during this period and burst piping after freezing. Labor conflicts among various unions are presently upsetting the work schedule, and skilled turn foremen are very difficult to hire.

Foreign ores will be used almost exclusively for the plant's operation, coming from Brazil, Spain, Sweden and French Morocco. A small amount of domestic ore can be obtained. Current plans call for a working inventory of 30,000 tons of ore. Beehive coke from the Connellsville district will be used, although some byproduct will be available to blow in the furnace. A working inventory of 20,000 tons of coke is to be carried.

Ore and coal shipments are already on hand and the problem of space for storage is critical. The furnace is surrounded by the plant of the Philadelphia Gas & Electric Co. which formerly was a supplier of coke to the furnace, making a large coke reserve at the furnace unnecessary. Docking facilities are owned by the gas and electric company but costly dredging was required and docking equipment had to be put into shape.

Two old vertical blowers will be used until the end of the year when it is expected that the new Ingersoll-Rand turbo-blower with a capacity of 30,000 cfm at 25 psi pressure will be installed. A new plant for the screening and crushing of ores costing $125,000 is now under consideration. The new pig machine already installed is a single strand 145 in. Bailey that will handle the full output of the furnace.

No pig iron will be available for sale when the furnace gets into production, as it will be used by the owners exclusively in trading for line pipe. It is a problem

(CONTINUED ON PAGE 142)

Europe Faces 2 Million Ton Scrap Defic

Why This Study Was Made

Geneva

• • • At the end of the war European reconstruction was held up by two major bottlenecks: coal and steel. The latter was to a great extent a consequence of the first. Lack of coke was the reason why numerous blast furnaces in perfect working order were kept idle.

However, steel can be produced also by remelting scrap. And Pig iron output can be increased, with the same amount of coke, by adding to the blast furnace a certain percentage of scrap. Thus scrap developed into a raw material of major importance for the reconstruction of Europe.

Although war damage scrap could be expected to be abundant all over Europe, the quantities needed to compensate for the lack of coke and for normal consumption are of such magnitude that scrap developed into a bottleneck. Hence the Steel Committee of the Economic Commission for Europe decided to select a panel of scrap experts. They were invited to study on-the-spot measures to increase scrap collection.

This panel has already visited England and France. While continuing their work, a general survey on the scrap situation in Europe was prepared, at their request, by the Secretariat of ECE.

This study was presented to the third session of the Steel Committee in September and was generally approved. On the basis of these discussions the present revised version was released for publication.

Geneva

• • • **Before the war** Europe obtained scrap from four main sources.

Prewar Scrap Sources of Europe and U. S.

Type	Pct of Total Scrap Consumption	
	In Europe	In U. S.
Circulating Scrap	45	53
Process Scrap	22	19
Capital Scrap	28	28
Imported Scrap	5	0

Although it represents the smallest fraction in the total, "Imported Scrap" is one of the most important of the four sources to consider for the future. This is because it is unlikely that Europe will be able to obtain imports of scrap as it did before the war. The main source of these imports was the U. S.

Year	Europe's Imports of Scrap from U. S. (In thousands of metric tons)
1936	735
1937	1897
1938	1487
1939	1291
Total 1936-1939	5410 or a yearly average of 1352

The table on "Europe's Trade in Scrap" shows that whereas Europe, in 1936-1938, imported on an average just under 1.5 million tons (supplied mainly by the U. S.), there will be an important deficit of 1.9 million tons in 1948 on the basis of individual countries' requirements and availabilities.

A very small part of this deficit—say 0.1-0.2 million tons—may be covered by imports from other continents. But the effect of these imports will be more than offset by exports of German scrap to the U. S. The apparent deficit of European countries should, therefore, be set at over 2 million tons in 1948.

Shortage of coke has played an important role in the unbalance of European scrap supplies. With inadequate supplies of metallurgical coke, scrap has to be used in blast furnaces in a proportion well above the normal level [this saves melting time, and thus coke]. In some countries this amounts to a 25 to 30 pct charge instead of the 10 pct used before the war.

The shortage of coke has also caused pig iron to be in short supply. Thus a greater proportion of steel is produced in openhearth furnaces. Moreover, the proportion of scrap to pig iron used in openhearth furnaces is shifted in favor of scrap.

A striking example of these effects is the complete reversal of the scrap situation in Belgium and Luxembourg which used to export some 336,400 tons and are now demanding imports of 625,000 tons. This is a net difference 961,400 tons.

On the other hand, German instead of importing scrap as sl did before the war, should in 194 export a sufficient quantity European countries to offset tl loss of other intra-European e ports.

Also contributing to the Eur pean scrap deficit is the cessatic of scrap imports from the U. Before the war European steel i dustry relied on them for some 1 million tons—or 5 pct of its scra supplies.

This adverse effect is aggr vated by U. S. imports of Eur pean scrap. These are expected bring the difference with prewa to about 1.8 million tons.

Despite the apparent deficit 2 million tons for 1948, it does n appear that the shortage of scra has had so far (October 1948) very adverse effect on Europea steel production. Output has bee rising steadily since the begi ning of the year. Here are son reasons why this was possible:

(1) Existing stocks of scra were drawn on heavily. In son countries they are now reaching dangerously low level.

(2) Scrap drives in some cou tries have been greatly successfu England is a good example.

(3) Stated import requiremen have proved, in some cases, som what inflated.

Nevertheless, it seems that ste production would have risen fu ther in some countries if the supplies of scrap had been mo abundant.

The scrap situation in 1949 w probably be affected by the follo ing factors:

FAVORABLE

(1) Scrap requirements for bla furnaces should be reduc as a result of improved su ply of coke.

(2) Supplies of pig iron f steelmaking should be b ter.

(3) Exports of scrap from t Bizone of Germany shou be increased.

(4) Increased supplies of ca tal scrap should res from the greater possib ties of replacing capi equipment.

ccording to Study By Steel Div. of UN

Terms Used In Digest of Study

New York

• • • Due to the wide interest in European scrap potentials and problems the Editors of THE IRON AGE have decided to publish a digest of the European scrap study prepared by the Steel Div. of the United Nations' Economic Commission for Europe.

Space limitations do not permit publication of the full 29-page study. The complete paper can be obtained on request to the Steel Div. of the E.C.E., Palais de Nations, Geneva.

All data and conclusions are those of the Steel Div. and do not necessarily reflect the opinions of THE IRON AGE.

In order to save space, descriptions of terms used in the study have been condensed into the following handy package:

"Europe"—is intended to mean "Europe, excluding the Soviet Union." Lack of information on Russia prevented inclusion of estimates on that country.

"Circulating Scrap"—is home scrap arising at steel works. It consists of ingot crops, waste in rolling, split metal, etc. It should increase pro rata with steel production.

'Process Scrap"—is scrap resulting from fabrication in the metal working industries. Supplies should increase pro rata with the finished steel consumed.

"Capital Scrap"—or old scrap—arises out of obsolete equipment, railway, ships, etc. Supplies are more or less proportionate to the steel consumed some 5 to 15 years earlier.

FAVORABLE

(1) Shortage of rich iron ores (10 to 15 pct of import requirements) is expected.

(2) A decrease is expected in the supply of war damage scrap.

(3) Increased demand for scrap will result from increased steel production.

(4) An increase in scrap exports to other continents is expected.

On the basis of present evidence is likely that European steel oduction will be more affected the shortage of scrap in 1949 an in 1948. It is also likely that el production capacity will be ng idle in Europe because of ap shortage. This is apart from pacity liable to remain unused ing to coke and iron ore short- es.

The most immediate remedy uld be to increase further the ports of German scrap to the nefit of the European countries. rmany is now the only big res- voir of scrap. It is generally imated that well over 10 million ns of war damage scrap could recovered there.

Another remedy would be a bet- organization of capital scrap lection and a speedier return of ocess scrap to blast furnaces or el works. Results of British ap collection efforts during the st 12 months have surpassed all pectations. It appears that 1 llion tons of scrap have been lected there solely as a result a scrap campaign systemati- ly organized.

The present total production ns of all European countries visage an increase of 12.08 mil- n tons of steel and 11.8 million s of pig iron over the yearly rage of 1936-1938. If these ns are carried out the gap be- een steel and pig iron will de- ase from 22 pct to 18 pct of the al steel production.

Assuming that the proportion of iron production used for steel king will increase to 86.5 pct npared with 85.5 pct in 1936- 8, it becomes obvious that the rage consumption of scrap per of steel produced will de- ase. The question remains as to whether this decrease in specific scrap consumption will be sufficient for Europe to dispense with the prewar imports from other continents of some 1.5 million tons of scrap and 0.5 million tons of pig iron.

This question is the crux of the European scrap problem. On basis of present evidence it is most unlikely that in the future Europe will again be able to import scrap and pig iron on the same scale as prewar.

In order to assess the probable scrap situation in 1951, a calculation has been made estimating both the probable demand and supply of scrap in that year. First the prewar situation has been calculated in detail in the following manner:

Estimated Prewar European Scrap Consumption
(all figures in million tons)

To produce in 1936–1938 Crude Steel at a yearly average of...........	53.04	
Statistics prove that the metal consumed (109 pct) amounted to....		57.82
From the quantity of metal required it has been possible to derive a figure for actual consumption of scrap in steel making by subtracting the total pig iron used for steel making in Europe in that same period....		35.84
This amount of pig iron was obtained by subtracting from the total pig iron production.........	41.33	
the quantity of pig iron used in the iron industries (14.5 pct).....	5.99	
and by adding the net pig iron imports from other continents....	0.5	
Thus a figure is arrived at for a consumption of scrap for steel making of...........................		21.98
to which has been added the quantity of scrap used in iron industries		3.00
and in blast furnaces (7.5 pct)...		3.10
This calculation arrives at the figure for the estimated total of prewar consumption of scrap for the whole of Europe of..................		28.08

In order to estimate the sources from which this total supply of 28.08 was obtained, a further calculation has been made by deducting from this total:

(1) The recorded net imports of scrap from outside Europe....... (1.48)

(2) The supplies of circulating scrap (24 pct of crude steel production) ....(12.73)

(3) The supplies of process scrap (18 pct of finished steel consumption) .... (6.52)

It has been estimated that the remaining balance of 7.35 million tons must have been covered by the collection of capital scrap in Europe. This calculation was then repeated for the year 1951 and is shown in detail below:

Estimated European Scrap Consumption and Production in 1951 (in million tons)

1951 Targets		
Crude steel production..........	65.12	
Metal required (109 pct)........		70.98
Metal supplied		
Pig iron: total production......	53.13	
of which 86.5 pct for steelmaking.....................		45.96
Scrap in steel furnaces......		25.02
Scrap in blast furnaces (7½ pct of 53.13).............		3.98
Scrap in foundries (estimated at 50 pct of foundry iron)..		3.59
Total apparent requirement of scrap		32.59
Sources of supply		
Circulating scrap (including "chutes des usines de transformation") 24 pct of 65.12....	15.63	(48 pct)
Process scrap: 18 pct of finished steel consumed in Europe (73 pct of 65.12 minus 3.0 net export to other continents).......	8.02	(24.6 pct)
Difference to be covered by capital scrap.........................	8.94	(27.4 pct)

The last point which has to be demonstrated is whether or not Europe will be able to collect some 9 million tons of capital

EUROPE'S TRADE IN SCRAP
(in 000 metric tons)

Countries	Net Imports 1936/38 Yearly Average	Net Imports 1947	Net Imports 1948 Requirements	Net Exports 1936/38 Yearly Average	Net Exports 1947	Net Exports 1948 Availabilities
Austria	32.6	0	120	0	72.9	0
Belgium-Luxembourg	0	198	625	336.4	0	0
Czechoslovakia	153.3	27	545	0	0	0
Denmark	0	0	0	98.6	48.4	45
Finland	8.4	*	60	0	0	0
France	0	0	0	362.1	33.6	0
Germany	652.4	0	0	0	400†	1,200†
Saar		83	132		0	0
Hungary	55.9	0	18	0	0	0
Italy	520.1	74.6	775	0	0	0
Netherlands	0	0	45	324.9	59.9	0
Norway	0	0	5	25	6	0
Poland	506.4	52.7	400	0	0	0
Rumania	43.8	*	45‡	0	*	0
Sweden	61.9	61.8	60	0	0	0
Switzerland	0	50.8	80	71	0	0
United Kingdom	720.5	378.3	1,040	0	0	0
Other Countries	0	*	0	36	*	800§
Total	2,755.3	926.2	3,950	1,254	620.8	2,045

*—Not available.
†—Bizone only—estimate.
‡—Secretariat's estimate.
§—Secretariat's estimate, including Soviet Zone, of Germany's exports to European countries.

scrap in 1951. This figure represents a 21.6 pct increase over prewar collections.

It is very difficult to find an accurate relationship between the production of steel and supplies of capital scrap. But it seems that over long periods of time supplies of capital scrap rise approximately in the same proportion as steel production.

In 1951 the European steel production should be 22.6 pct above the average for 1936-1938. An increase of 21.6 pct of capital scrap supplies should certainly be possible. As a result of the war and the post war steel shortage, the replacement of a great amount of capital equipment has become long overdue. With steel becoming more plentiful, this replacement will be possible. Thus the extensive modernization programs which all the European countries have planned should yield a large increase in supplies of capital scrap.

The collection in the whole of Europe of 9 million tons of capital scrap should be possible, since England alone is planning to collect in 1951 some 3.5 million tons, and the Bizone of Germany at least 2.4 million tons, of capital and war damage scrap. This would leave just over 3 million tons to be collected by the remaining European countries, including France and Italy.

Conclusion

In conclusion it may be said that self-sufficiency in scrap is possible and probable for Europe by 1951 but in order that it may be achieved, relentless efforts must be made to—

(1) raise the production of pig iron as much and as quickly as possible;
(2) speed up the return to the steel and blast furnaces of circulating and process scrap;
(3) collect every available piece of capital scrap;
(4) retain for use within Europe all the supplies of scrap originating on this continent;
(5) resume the extensive prewar trade in pig iron and scrap among all European countries in order that the potential surpluses of pig iron and scrap of certain countries may benefit those countries which have to rely on imports of these materials.

Facts Don't Support UN Report on Scrap, Says Charles Sawyer

Washington

• • • **Secretary of Commerce** Charles Sawyer says that the facts do not support the Nov. 11 statement of the United Nations Economic Commission for Europe to the effect that some of Europe's steel production capacity probably will still be idle next year beca of the lack of scrap iron and t one reason for the shortage of sc is the large export of scrap fr Germany to the United States.

"It is true," Mr. Sawyer stat "that our continued effort to scrap from Germany to the Uni States has produced some resu but as yet they are far from sa factory to me. Up to July 1 th had been exported only 4000 t of iron and steel scrap to this co try. Following that, July expo from Germany to the United Sta were 9500 tons, for August 24, tons, for September 67,000 to and for October 51,000 tons, m ing a total of 156,000 tons. Of t tonnage 49,000 tons were our o army scrap. During this per there were large exports of sc from Western Germany to ot European countries, amounting at least 1,075,000 tons."

"Moreover," he added, "the port to the Secretary of Comme of March, 1948, by a Joint Ind try-Government Mission conser tively estimated that there were million tons of scrap in Bizo Germany, enough not only to t care of Western Germany and other ECA nations in Western E rope, but also to help take care our requirements. More recent formation indicates that there m be as much as 15 million tons scrap in Western Germany.

"I am also informed that Germ steel mills have such large inv tories of scrap in their plants t shipments of scrap to these m have been stopped. If the Uni States had not received a sin pound of indigenous scrap this y and the European steel mills co have used this scrap, European p duction would have been increa by only two tenths of one pct."

More Nails for Canada

Ottawa

• • • **Canada produced** 7798 t of nails in September against 7 tons in the previous month 6879 tons in September, 1947.

For the 9 months ending w September nails produced in C ada totalled 63,295 tons compa with 56,866 tons in the correspo ing period last year.

Production of steel wire in S tember amounted to 28,619 t against 22,875 tons in August 27,266 tons in September, 1947.

lations Getting ECA Aluminum Exporting to U. S. at Premiums

Big Tonnages Involved; Sales At Markups of 50-70 Pct Over Domestic Prices

By JOHN ANTHONY
Eastern Regional Editor

w York

• • **Aluminum producers,** ham- rung by power shortages in their orts to meet the requirements of eir customers, are aghast at the nnages of scrap, primary ingot d mill products currently being ported from Marshall Plan na- ns for sale at markups of 50 to pct over the domestic market.

Imports of aluminum from west- n Europe began soon after the auguration of the Economic Co- eration Administration's pro- am on Apr. 3 and are constantly celerating. Current aluminum ports from this area, as reported the Census Bureau, have reached pct of ECA-authorized ship- nts. In the 6 months to the end September, ECA has authorized e purchase of 200 million lb of imary aluminum by western urope at a cost of $26 million. e tonnage was to come almost clusively from Canada at a price 16¢ per lb. But in 5 months of at period aluminum imports from stern Europe totaled 44 million Nearly 42 million lb came in as rap, 2¼ million lb as ingot and 0,000 lb as sheet.

The foreign ingot has been sold this market as high as 27¢ per a 50 pct markup over the domes- ingot price. Foreign sheet is ld as high as 50¢, for grades iced by domestic producers 30¢.

ECA officials are studying the gnificance of the import statis- s so as to avert developments ch as this. They are aware of e problem and are attempting to rk out steps to control the two y traffic. Were it not for the llars provided by ECA, western urope would be unable to buy nadian aluminum and this ton- ge would come into the United ates to relieve the shortage here. owever, the problem is not a mple one, for reports from Europe dicate that the Russians and their tellite states stand ready to buy is aluminum and pay for it in ld.

Producers say that authoriza- ns for Canadian aluminum are tonnages in excess of the ca- city of war-torn Europe to make use of in its present stage of recovery. They feel that the scrap, ingot and semifinished products now being exported could be used to better advantage by foreign producers, mills, foundries and fabricators for the production of finished products. There might well be an exportable surplus of such products, to which there would be no objection. But the tonnage of low-priced Canadian aluminum available to domestic consumers would be considerably higher than at present.

The 44 million lb of aluminum imported into the United States in the 5-month period does not reflect the full extent of the aluminum surplus in ECA nations. European speculators have been auctioning off aluminum to the highest bidder ever since ECA shipments created an aluminum surplus in western Europe. We have no complete record of the export tonnages siphoned off by eastern European buyers. But the tonnages of foreign aluminum bought by aluminum-starved domestic consumers went at prices as much as 50 to 70 pct higher than the prices of North American producers.

Ironically enough, this unwholesome situation boomerangs from the effort of ECA to give adequate quantities of aluminum to western Europe at the lowest possible price. Through the cooperation of producers in Canada and the United States, ECA obtained aluminum at the prevailing domestic price of about 16¢ per lb, although the worldwide shortage makes it possible to get a much higher price in world markets. Foreign aluminum production is much higher priced, hence there is every incentive to use all the ECA aluminum obtainable while disposing of their own metal through the export market.

Aluminum producers recognize that the purpose of the ECA program is to permit reconstruction of the nations of western Europe so that they may regain their place in world markets. But they say these exports do not contribute to

ECA Aluminum Authorizations
Apr. 3 to Sept. 30
(in pounds)

United Kingdom	181,879,040
France	6,063,680
Netherlands	7,584,640
Germany (French Zone)	1,554,560
Greece	1,653,120
Denmark	483,840
Total	199,218,880

U. S. Imports of Aluminum
From Western Europe, 1948
(in pounds)

Source: U. S. Bureau of Census

April	2,461,428
May	2,702,814
June	4,778,109
July	16,544,743
August	18,505,559
Total	44,992,653

Aluminum Exports from ECA Countries to the U. S., April-August 1948
(pounds)

Country	Scrap	Ingot	Sheet
United Kingdom	19,464,036	595,192	164,692
Germany	9,584,602	......	......
Netherlands	2,941,883	......	683,812
Switzerland	......	1,146,392	1,552
Belgium	1,385,336	50,000	......
Italy	4,712,075	......	......
Sweden	3,822,160	......	......
Norway	......	440,920	......
Total	41,910,092	2,232,504	850,057

the rehabilitation of those nations. Their normal exports are finished products, not raw materials. But the aluminum they are selling for export is in substantially the same raw material form as the metal being supplied to them under ECA.

There is no present indication of any decline in the tonnage of aluminum imports from western Europe. Tonnages have increased every month since the ECA authorizations began. Reports on incoming cargoes since August show that large tonnages are still entering the country.

The metal trade press carries on its advertising pages any number of offerings of large quantities of aluminum by import agents. One offers sheet in carload lots. Another, who states he represents large European producers, offers ingot, sheet, rod, wire, foil and extrusions. Among others, three London firms are offering large tonnages of sheet, rod and bar.

The 200 million lb of ECA aluminum purchases authorized for the first 6 months of the program represents an average of 33 1/3 million lb per month. During the first 2 months, April and May, aluminum imports were the equivalent of 7½ pct of authorizations. By July and August, the ratio had jumped to 55 pct. More recent data are not available. However, authorizations for the fiscal year beginning July 1948 total 504 million lb, an increase of tonnage to a monthly average figure of 42 million lb.

With the aluminum shortage in this country growing more critical every month, producers say it is essential that the ECA aluminum program should be reduced at once to appropriate size so as to protect the interests of domestic consumers. It is unreasonable, in the view of producers, for consumers to be required to pay large premiums for the equivalent of metal shipped abroad at government expense.

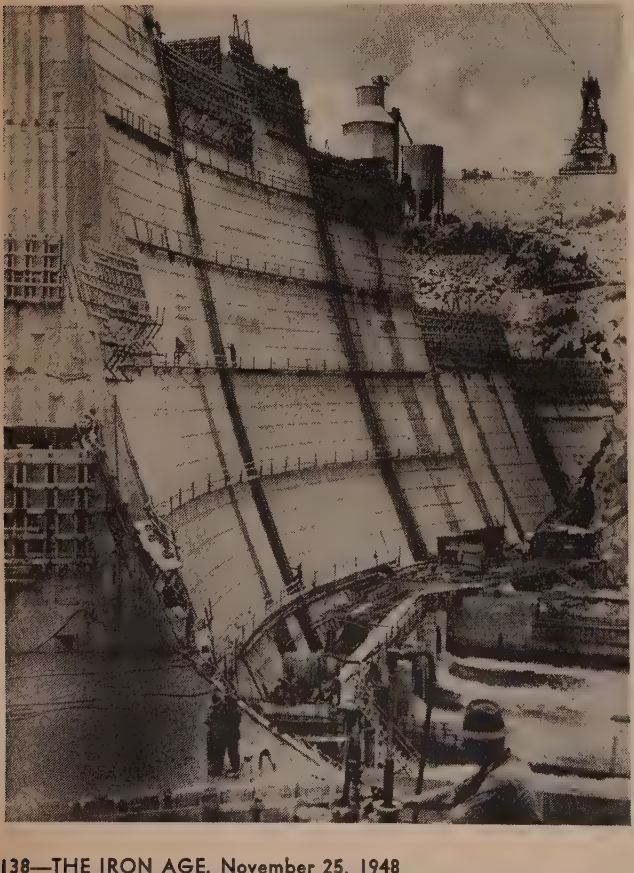
Canadian Government May Finance Building More Blast Furnaces

Ottawa

• • • **The Canadian** government may finance the building of additional blast furnaces in Canada to provide pig iron for increased steel production necessary to meet steadily increasing demands and relieve shortages. The exact number of blast furnaces to be built has not been made known, nor has their location. However, it is reported that provision will be made in the forthcoming budget for the required expenditure.

It is further pointed out the government will not operate the furnaces under public ownership, but they will be leased to Canada's large steel companies, and it is understood that eventually the operators will be given an opportunity to purchase the stacks from the government.

Dominion Steel & Coal Corp. is reported lining up a large-scale expansion program for its Sydney works to be presented to the Federal government. The proposed program is based on a lengthy survey and will be presented to Trade Minister Howe. C. W. Anson, general manager of the Sydney plant, declined to comment on details of the plans to be submitted to Ottawa, but Montreal interests stated the expansion would be "in a general way."



○ ○ ○

TASMANIA: *The island is rich in natural resources and its government has ambitious plans for their development. First step, however, calls for large hydroelectric resources. Here, under construction, is Clark Dam at Butler's Gorge. After completion, some* 485 *million gal of water per day will pass continuously through a power station at the foot of the dam and generate* 14,000 *hp.*

○ ○ ○

Requests Supreme Court To Review Inland Case

Washington

• • • **The Supreme Court** has been asked by the United Steelworkers (CIO) to review a decision of the Seventh Circuit Court of Appeals which in effect prevents the Steelworkers from bargaining with the Inland Steel Corp. for a pension and retirement plan because the union officers had not signed non-Communist affidavits.

The circuit court decision upheld a ruling of the National Labor Relations Board. The court held that Inland was bound by the Taft-Hartley Act to bargain with the union on terms of a pension and retirement plan. But the court added that such bargaining could not be held until the union officers signed non-Communist affidavits as required by Section 9 (h) of the law.

The Supreme Court has already agreed to review the non-Communist provision of the law in case involving the American Communications Assn. (CIO). The ACA case involves a collective bargaining election and not pension and retirement bargaining.

AA Leases Two Plants o Companies Holding Government Contracts

shington

• **War Assets** Administration approved the leasing of two plus government-owned indus- al plants which will be used for production of military equip- nt for the Dept. of the Air Force.

ne plant (Plancor 821) is lo- ed in Johnson City, N. Y., and s operated during the war by the mington-Rand Co. for the manu- ture of airplane propellers and re parts. It has been leased to General Electric Co. for the fillment of new government con- cts.

he other property leased (Plan- 220) is located in Milwaukee d was operated during the war the A. O. Smith Corp., for the duction of airplane landing and gear equipment. It has now n leased to the A. C. Spark Plug of Flint, Mich., and will be used produce military equipment.

oth leases are subject to an nion by the Dept. of Justice that y do not violate the federal anti- st laws.

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stice Dept. Gains Consent Judgment In Abrasive Grain Suit

shington

• • **The Justice Dept.** has an- nced the entry of a consent dgment in an antitrust suit ainst the Abrasive Grain Assn. d the following abrasive manu- turers: Carborundum Co., Ni- ara Falls, N. Y.; Norton Co., rcester, Mass.; Exelon Co., awanda, N. Y.; General Abra- e Co., Inc., Niagara Falls; and erican Abrasive Co., Westfield, ss. The government's suit had rged price fixing and other il- al restraints in the sale of arti- al abrasives.

he judgment orders the defen- its to refrain from fixing prices uniform conditions of sale of ificial abrasive grain, or from hanging price lists or quota- s among themselves.

t also requires the defendant nufacturers to give purchasers rtificial abrasives the option of chasing at a delivered price, or a factory price based on the delivered price less actual cost of transportation.

Herbert A. Bergson, Assistant Attorney General, said "The artificial abrasives involved in this case are widely used industrially for polishing, grinding and buffing such products as lenses, glass, granite, marble and gems. They are basically important to the construction, automotive, plumbing supply, hardware, glass, optical, stone and gem polishing industries. The membership of the defendant Abrasive Grain Assn., which is bound by this judgment, manufactures 98 pct of all abrasive grain available in the United States."

"The judgment entered in this antitrust suit will bring about competitive prices and selling policies by the manufacturers of this important industrial product. Industry and the public will benefit from our action as prices of abrasives have a direct effect upon costs in a large number of our basic industries," Mr. Bergson stated.

HIS MERRY LOCOMOBILE

New York

• • • **Vito Freselene is one guy** who can still sing an old tune and really feel right in place while doing it.

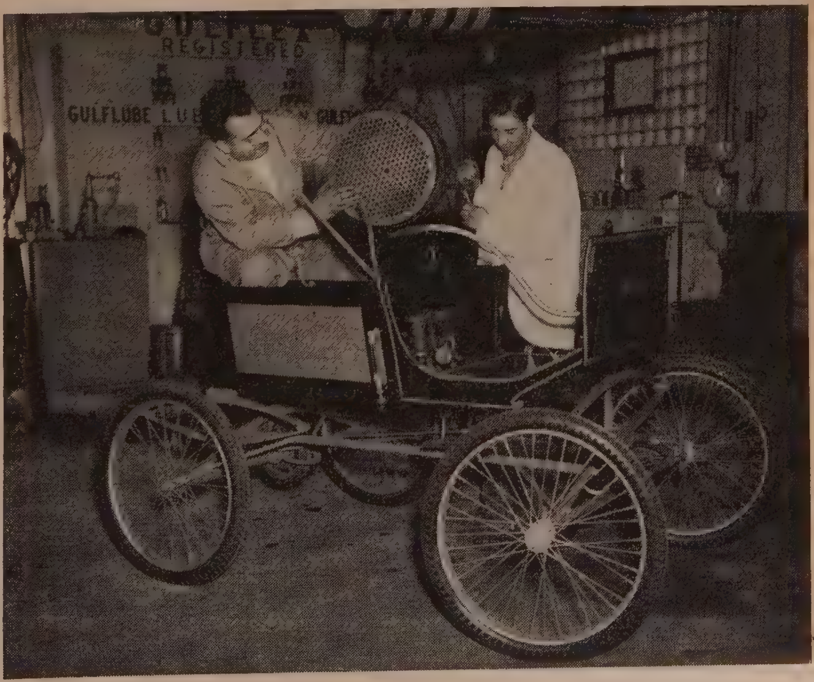
In 1945 he bought an old steam carriage that was built in 1901 by the Locomobile Co. of America. Its power plant consists of a 3½ hp 2-cylinder steam engine and a fire-tube boiler containing 308 seamless steel tubes, ½ in. diam and 20-gage in thickness.

The historic model will be exhibited under the joint sponsorship of the A. B. Murray Co., Inc., and its affiliate the Murray Tube Works at the 18th annual national exposition of Power & Mechanical engineering at Grand Central Palace here during the week of Nov. 29 to Dec. 4.

The vehicle was originally purchased by General Paul A. Oliver of Elizabeth, N. J., for his niece. However, it was not operated after 1909 when the boiler burned out.

After Freselene bought the car he called on the A. B. Murray Co. of Elizabeth for the materials to build a new boiler which he did in his spare time, and subsequently installed it.

Since the overhauling job, Vito has toured over approximately a thousand miles in and around northern New Jersey. He's probably an odd sight but still seems to get there. On time—well, now that's another question.



Voluntary Allocations Gets Boost From Steel Products Advisory Committee

Washington

• • • **The** voluntary allocations program received a shot in the arm Nov. 19 when the Steel Products Advisory Committee, completely reversing its earlier position, approved the continuation beyond Feb. 28, 1949, of five voluntary plans calling for the monthly allocation of a total of 347,100 tons of steel products.

At its Oct. 6 meeting with the Dept. of Commerce, the committee refused to consider the extension of any plans except those calling for steel for defense needs. At that time it approved extension of programs calling for a total of 129,775 tons monthly for the Armed Services, Atomic Energy Commission, and the National Advisory Committee for Aeronautics.

In addition, the committee at the Nov. 19 meeting approved one new voluntary plan and recommended the development by the Office of Industry Cooperation of voluntary allocations programs for four new projects.

The five voluntary programs approved by the committee for extension for a 6-month period beyond Feb. 28, 1949, are:

(1) Construction and repair of oil tankers, 40,380 tons of steel products monthly, which is at the present rate.

(2) Construction and repair of merchant vessels, 15,190 tons of steel products monthly, an increase of 5,000 tons monthly above the present rate.

(3) Construction and repair of inland waterway barges, 25,000 tons of steel products monthly, an increase of 5000 tons per month above the present rate.

(4) Repair and construction of freight cars, up to 250,000 tons of steel products monthly to meet the present 10,000-car-per-month production goal.

(5) Oil field tank and production equipment, 16,530 tons of steel products monthly, which is at the present rate.

In addition, the steel committee approved a proposed plan which would make 26,000 tons of steel products available monthly for the manufacture of mining machinery, to become effective during February, 1949. It was agreed that the quantity of steel involved in this program might be increased later, following further study and review of the mining machinery industry steel supply situation.

A relatively small tonnage of steel for the construction of ore-carrying cars to transport a strategic material in an undisclosed foreign country for eventual transportation to U. S. stockpiles was also pledged by the committee.

A similar recommendation was made to develop a program to provide steel sheets for the construction of grain storage bins.

The committee recommende that a program to provide stee for terminal and bulk oil tank storage be developed by OIC This proposed program will be resubmitted for consideration at the next meeting with the Steel Products Advisory Committee.

The proposed program to provide pipe for the East Tennesse Natural Gas Pipeline Co. was referred back to the Office of Industry Cooperation for further study and review. The committee indicated that it would underwrite the requirements for this project when problems of a technical nature have been solved.

The committee also requeste OIC to develop a program for allocation of steel products to the bituminous coal mining industry

Coming Events

Nov. 28-Dec. 3 American Society of Mechanical Engineers, annual meeting, New York.
Nov. 29-Dec. 4 National Exposition of Power & Mechanical Engineering, New York.
Dec. 2-4 Society for Experimental Stress Analysis, annual meeting, New York.
Dec. 2-4 American Institute of Mining & Metallurgical Engineers, annual electric furnace steel conference, Pittsburgh.
Dec. 2-4 American Metallizing Contractors Assn., annual meeting, Tulsa, Okla.
Dec. 3 Magnesium Assn. and Mellon Institute, magnesium meeting, Pittsburgh.
Dec. 6-8 Electric Welding Conference, Detroit.

1949

Jan. 10-14 Society of Automotive Engineers, annual meeting, Detroit.
Jan. 10-14 Material Handling Institute and American Society of Mechanical Engineers, Materials Handling Show, Philadelphia.
Jan. 14 Malleable Founders' Society, semiannual meeting, Cleveland.
Jan. 24-28 American Society of Heating & Ventilating Engineers, annual meeting, Chicago.

Battle Over Legality Of a Delivered Price System on at Capito

Washington

• • • **The battle on** Capitol Hil over the legality of delivered pric systems officially got under way last week.

For the past 6 months, a Senat Commerce subcommittee heade by Senator Capehart, R., Ind., has been waging a steadily stronge campaign in favor of delivere price systems. The opposition, under the aegis of the Federa Trade Commission, said little bu began to dig in for the comin congressional battle.

Now the fat is in the fire. Representative Patman, D., Texas sounded the keynote of the argument to be used by Capitol Hil proponents of f.o.b. pricing whe he told THE IRON AGE: "The proceeding of the Capehart subcommittee is nothing but deceitfu propaganda. It is a frontal attac on the nation's antitrust laws."

Senator Capehart, meanwhil not to be outdone, asserted tha the FTC's role should be one o helping, not hurting busines men. When Walter B. Wooden, associate general counsel of th FTC, hinted darkly in testimon that "there are some people wh want to weaken the antitrus laws," Mr. Capehart accused hi

“bias and prejudice,” and de-
ared that such a statement ren-
ered him “unfit to sit as counsel
r the FTC.” “You’re there to
rve big business as well as lit-
e business,” he stated.

Meanwhile, a parade of wit-
esses representing the metal-
orking industry continued to
resent views to the Capehart
ubcommittee. Among these was
. K. Beeson, Pittsburgh Steel Co.
ice president, who told the sub-
ommittee that because of the
limination of freight absorption
y his company, Pittsburgh’s cus-
omers as a whole were compelled
pay approximately $500,000
ore for their products.

“While the present practice of
elling on an f.o.b. mill basis gives
s a temporary addition to our
ggregate selling prices of ap-
roximately $500,000 a year, it is
bvious to us that this is only
emporary and that, in the long
un, such practice will result in
substantial reduction in our
perations and the possible elim-
nation of profit on our opera-
ions.

“Instead of increasing competi-
ion,” Mr. Beeson predicted, “the
ystem will eventually lead to a
estriction of competition, and we
eek the legal right to sell our
roduct competitively in a
roader rather than restricted
rea.”

Joseph L. Block, Inland Steel
o. vice president, told Senator
apehart that “the statute you
nact should make it quite defi-
ite that the seller can be com-
etitive constantly and that he
eed have no fear of prosecution
or conspiracy merely as a result
f identical prices or ‘systematic
reight absorption’ in the absence
f evidence of collusive action.”
e said he also favored a legis-
tive definition of “price” in
ich a statute.

R. L. Gray, Sheffield Steel Corp.
resident, charged that the FTC
as adopted definitions of “price”
hich Congress had repeatedly
fused to do. “If the heavy in-
ustry of this country is to be
cialized,” he declared, “let’s do
with our eyes open and not
rough the indirection of arbi-
ary rulings which impose condi-
ons upon industry which first
ive it into an unsound economic
sition from which socialization
ust be the result.”

Canadian Steel Production and Shipments

Toronto

• • • Canadian production of primary iron and steel shapes for the month of August totaled 272,202 net tons, as compared with 276,250 tons in July and 244,601 tons in August 1947. Output for August included 262,790 tons of carbon steel shapes and 9412 tons of alloy steel shapes. In the production figures for August are included 70,955 tons of shapes shipped to producers own plants or plants within the primary industry for further processing.

Shipments for sale of primary iron and steel shapes in August amounted to 195,105 net tons of which 185,188 tons were carbon steel shapes and 9917 tons alloy steel shapes; in July shipments totaled 206,243 tons and included 197,066 tons of carbon and 9177 tons of alloy steel shapes, and for August 1947 shipments amounted to 182,324 tons including 172,301 tons of carbon and 10,023 tons of alloy steel shapes. The above figures which show iron and steel shapes for sale, do not include deliveries for further processing.

The following table shows production and shipments for sale of primary iron and steel shapes for the month of August in net tons:

August, 1948	Carbon Steel		Alloy Steel	
	Made	Shipped	Made	Shipped
Billets, etc. for forging	9,311	3,288	2,106	2,045
Other semifinished shapes, not for rerolling by makers	44,398	3	239	......
Structural shapes and piling	11,661	11,067	......	......
Plates	18,486	17,928	179	159
Rails	22,762	24,701	......	......
Tie plates and track material—				
Splice bars	1,160	1,282	......	......
Tie plates	1,237	1,180	......	......
Spikes	968	996	......	......
Concrete reinforcing bars	6,752	5,588	......	......
Hot-rolled bars for cold finishing	1,703	......	......	......
Other hot-rolled bars	31,964	32,309	4,712	5,613
Pipes and tubes	10,627	9,973	......	......
Wire rods	24,494	24,360	40	35
Hot-rolled black sheets	22,188	15,602	......	......
Cold reduced black sheets	2,905	2,655	......	......
Galvanized sheets	8,218	7,218	......	......
Steel castings	7,181	7,380	1,486	1,398
Miscellaneous hot-rolled products	21,450	4,185	344	344
All other products	15,325	15,473	306	323
TOTAL	262,790	185,188	9,412	9,917

Producers’ shipments of primary iron and steel shapes subdivided according to principal consuming industries for the month of August, in net tons, follow:

Industry	Carbon Steel	Alloy Steel
Automotive industries	7,159	3,437
Agricultural, including farm machinery	6,999	451
Building construction	20,604	172
Containers industry	15,620	3
Machinery and tools	9,841	991
Merchant trade products	33,448	295
Mining, lumbering, etc.	6,514	394
National defense	14	4
Pressing, forming and stamping	8,925	60
Public works and utilities	1,364	13
Railway operating	16,445	254
Railway cars and locomotives	15,555	98
Shipbuilding	3,980	86
Miscellaneous and unclassified	835	132
Wholesalers and warehouses	20,395	266
Direct export—(a) to British Empire	16,509	1,839
—(b) to other countries	981	1,422
TOTAL SHIPPED FOR SALE	185,188	9,917
Producers’ interchange	70,955	239

Construction Steel . . .

• • • **Fabricated steel awards this week included the following:**

1070 **Tons,** Louise, Ariz., U. S. Bureau of Reclamation Specification 2431 Davis power plant to Virginia Bridge Co., Roanoke, Va.

1000 **Tons,** Lancaster, Pa., building for Armstrong Cork Co., to Lehigh Structural Steel Co., Allentown, Pa.

820 **Tons,** Middlesex Co., N. J., bridge on Route 4, through Brann & Stuart Co., Philadelphia, to Bethlehem Steel Co., Inc., Bethlehem.

275 **Tons,** Nitro, W. Va., building for American Viscose Co., to Bethlehem Steel Co., Inc., Bethlehem.

260 **Tons,** Flushing, N. Y., 3 store buildings, Fresh Meadows, to Grand Iron Works, Inc., New York.

250 **Tons,** Milwaukee, theatre building through the Dome Realty Co. to Wisconsin Bridge & Iron Co., Milwaukee.

240 **Tons,** Ivorydale, Ohio, Proctor & Gamble Co., through Day & Zimmerman, Philadelphia, to Bethlehem Steel Co., Inc., Bethlehem.

235 **Tons,** Coram, Mont., outlet for the Hungry Horse Reservoir, U. S. Bureau of Reclamation Specification 2450 to Keyes Tank & Supply Co., Caspar, Wyo.

230 **Tons,** Schuylkill Co., Pa., bridge, through Mahlon Livengood, to Bethlehem Steel Co., Inc., Bethlehem.

• • • **Fabricated steel inquiries** this week included the following:

340 **Tons,** Multnomah Co., Ore., bridge Columbia River Highway, Public Roads Administration, Portland, bids to Nov. 30.

200 **Tons,** Wernersville, Pa., Wernersville State Hospital, due Dec. 1.

200 **Tons,** Warren, Pa., building for Warren State Hospital, due Dec. 1.

110 **Tons,** Lawrence Co., Pa., bridge, Pennsylvania Dept. of Highways, due Dec. 3.

• • • **Reinforcing bar awards this week included the following:**

1200 **Tons,** Allentown, Pa., filtration plant, Bass Engineering Co., Birmingham, Mich., low bidder.

600 **Tons,** Palm Beach, Fla., tuberculosis sanitarium for the State of Florida through Arnold Construction Co., Palm Beach, Fla., to Connors Steel Co., Birmingham.

440 **Tons,** Philadelphia, elementary school, Princeton & Hawthorne Sts., to McCloskey & Co., Philadelphia.

350 **Tons,** Philadelphia, elementary school, Sedgwick & Williams Sts., to Wark & Co., Philadelphia.

270 **Tons,** Kankakee, Ill., Kankakee, Ill., acute hospital for the State of Illinois, W. E. O'Neill Construction Co. previously reported low bidder. The job has been awarded through W. E. O'Neill Construction Co. to Truscon Steel Co., Cleveland.

240 **Tons,** Chicago, building for F. W. Woolworth Co. to Turner Construction Co., Chicago.

160 **Tons,** Tallassee, Ala., building for Tallassee Mills, to Connors Steel Co., Birmingham.

105 **Tons,** Cicero, Ill., St. Francis of Rome school building previously reported awarded to Van Etten Bros., bars will be supplied by J. T. Ryerson & Son, Chicago.

• • • **Reinforcing bar inquiries** this week included the following:

1800 **Tons,** Wilmington, Del., memorial bridge —3rd contract, due Nov. 30.

350 **Tons,** Philadelphia, school, 57th & Wynnefield Sts., due Dec. 6.

150 **Tons,** Beloit, Wis., high school building, bids close Dec. 12.

100 **Tons,** Wildwood, N. J., Grassy Sound Bridge, due Nov. 30.

50 YEARS AGO

THE IRON AGE, *November 23, 1898*

• "In 1849 when Mr. Corliss received a patent covering his engine, considerable resistance was encountered in the commercial use of so new an engine. After much negotiating, an agreement was made with a New England mill whereby he would receive for it only the value that was realized in fuel saving. This compensation was so great that the mill soon sought a compromise which netted Mr. Corliss a profit far in excess of what he would have accepted in a direct sale."

• "**The Cincinnati Planer Co. is the name of a new machine tool concern which will begin operations Jan. 1, 1899. They will make planers ranging from 24 to 60 in. and will employ 50 men. A number of good contracts from abroad and domestic sources have already been booked and the company will start off with flattering prospects.**"

• "No one will pretend that we ought to allow the Filipinos the latitude of a territorial government. The islands are peopled by an alien race which cannot be expected for a century to rise sufficiently to the standard of our institutions to become an integral part of the Union. We must therefore administer the country as a colony or dependency, and for years to come, place it under a military rule."

• "**The marked decrease in the bicycle business is being felt to a great extent by several builders of special machine tools for bicycle manufacturers. The number of concerns who ventured into the manufacture of bicycles and proved unsuccessful is large. Consequently, there is a great amount of this special machinery on second hand lists which is as good as new.**"

• "A prominent shipbuilding company reports that as a result of 3 years of constant experimenting which were caused by the unreasonable demands and constant strikes of their riveters, it is now able to drive every rivet by power machines. As a result, skilled labor, which has hitherto been indispensable and correspondingly arrogant and high-handed, can be replaced by unskilled labor."

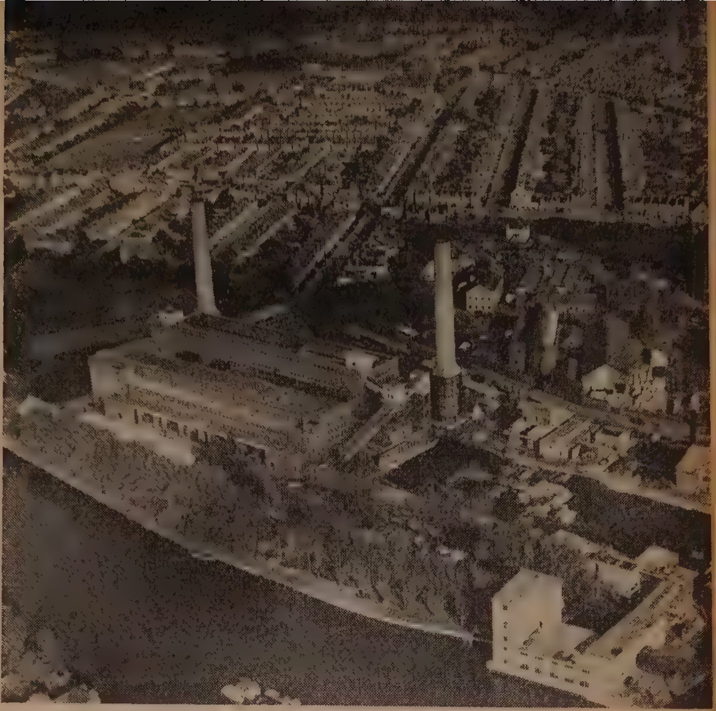
Chester Furnace

(CONTINUED FROM PAGE 133)

whether this furnace will be able to continue to operate in a competitive market. Most of those in a position to gage the merchant iron market sadly shake their heads and observe that there is no reason that the furnace should be in any better position to meet a competitive market than other, larger merchant furnaces. Operating costs probably will continue to be higher at this small furnace which is designed to operate on foreign ores than for other merchant furnaces. Operating men point out, however, that natural gas is coming into the Philadelphia district in larger volume. This may eventually permit the furnace to purchase good byproduct coke from the Philadelphia Gas & Electric Co. and sell its producer gas to them.

Rehabilitation work at Chester is going on under the management of Carl F. Schaber, a Brassert man. When it goes into production, Brassert will operate the furnace through James Gaugler as operating superintendent, a former Carnegie-Illinois blast furnace man.

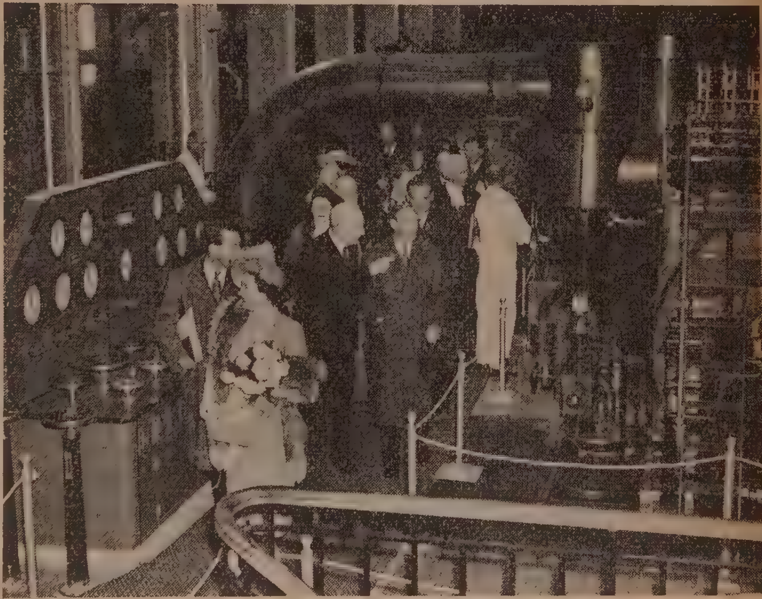
Kingston Power Station Part Of Britain's $1.8 Billion Electrification Plan

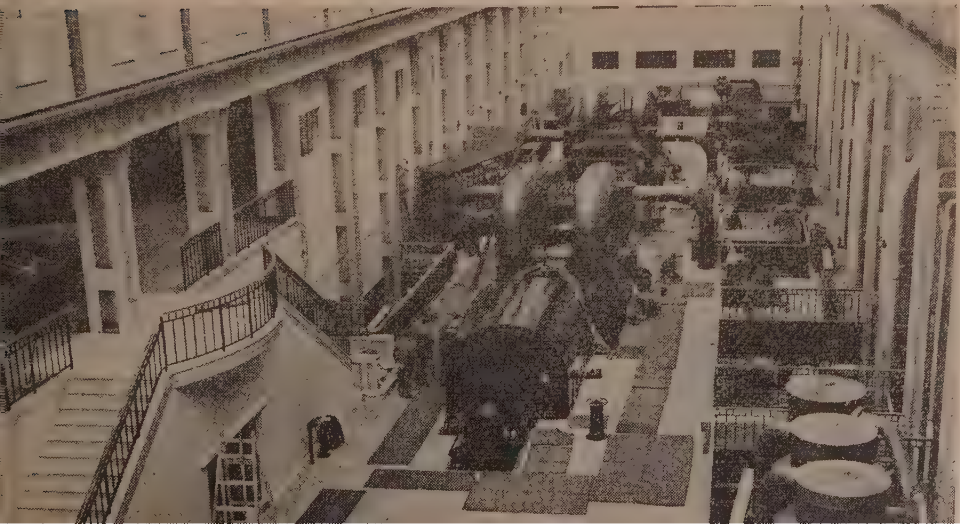


Recently the King and Queen visited an open house program at the new Kingston-On-Thames power station which is the first of 31 such generating stations that Britain will build at a cost of about $1.8 billion.

The boiler house produces 265,000 lb of steam per hr with a working pressure of 650 lb per sq. in. at a temperature of 850° F. Power output runs about 120,000 kw.

○ ○ ○





ABOVE

Here the King and Queen are shown passing the control panel beside one of the large turbines. This plant in itself was constructed at a cost of approximately $80 million.

○ ○ ○

LEFT

The area contains giant turbo-alterators which produce 30,000 kw each. It is large enough to house streets of homes on top of each other.

* RECOMMENDATION

Spray buffed steel parts
emulsion of Oakite Comp
no. 97 in water. Rinse c
with fresh water at 140°

For every metal-cleaning job there is an efficient Oakite method:

- Precleaning in tanks
- * Precleaning in machines
- Alkaline cleaning in tanks
- Alkaline cleaning in machines
- Pickling
- Barrel cleaning
- Electrocleaning
- Pre-paint treatment in machines
- Pre-paint treatment in tanks
- Steam-gun cleaning
- Paint stripping

FOR MORE INFORMATION about these and other processes—burnishing, anti-rusting, treating water in paint-spray booths, etc.—consult the Oakite Technical Service Representative in your vicinity or write direct.

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Technical Service Representatives Located in Principal Cities of United States and Canada

OAKITE
REG. U. S. PAT. OFF.

Specialized Industrial Cleaning
MATERIALS • METHODS • SERVICE

Argentina's 5-Year Plan Slowed by Dollar Famine

Birmingham

• • • **Argentina's** 5-year plan is being momentarily slowed down by a dollar shortage, according to General Juan A. Pistarini, general of the army and minister of public works of the Argentine Republic. The General and his party made an official visit to the United States in September and October.

The official visit by the Argentine minister of public works had as its purpose the inspection of U. S. shipyards and factories, flood control projects and transportation facilities.

The minister explained that Argentina is open to any solution to her present problems which would put her near to the United States economically. He also stated that his country stands solidly behind the United States in the cold war against Soviet Russia. It is General Pistarini's belief that the United States should guide the world.

A **partial** itinerary of the tour of the United States by General Pistarini included The Ingalls Shipbuilding Corp.'s shipyards at Pascagoula, Miss. and Decatur, Ala.; experimental station of Mississippi River Commission at Vicksburg, Miss.; dredging operations of Corps of Engineers, U. S. Army, at mouth of Mississippi River; Higgins Industries in New Orleans; The Ingalls Iron Works Co. and Tennessee Coal, Iron and Railroad Co. in Birmingham, Ala.; Tennessee Valley Authority area; Smoky Mountain National Forest; Dravo Corp. plant at Pittsburgh; Ellicott Machine Co. in Baltimore; Moisant International Airport, New Orleans; Army Air Force Training Base at Keesler Field, Biloxi, Miss.; National Airport, Washington, D. C., and LaGuardia and Idlewild Airports, New York.

While in Birmingham, the General expressed his opinion that the United States was the ideal place in which to buy much of the floating equipment and machinery for his country's 5-year plan.

The South American country has already placed contracts for more than $25 million worth of floating equipment for river and harbor improvements alone. Argentina expects to spend more than $500 million on its 5-year program.

The General revealed that because of the dollar shortage, Great Britain and Italy had been favored thus far. Argentina has seemingly unlimited funds in terms of British pounds. This scarcity of American dollars, however, has not stopped General Pistarini from placing contracts in this country for the purchase of equipment.

Hartford Exhibits Slated To Operate Under Power

Hartford, Conn.

• • • **A machine tool,** welding and metalworking equipment show that will exhibit equipment of national manufacturers, will be held in the Hartford Times Radio Center Bldg., Dec. 6 to 10, 1948. The show, held under the auspices of the Austin-Hastings Co., Inc., of Cambridge, Mass., will have all equipment exhibited under power and in operation.

Included in the show will be machine tools built by Rockford Machine, Mattison Grinder, Fosdick, DeVlieg Machine, Taft-Pierce; welding equipment by Westinghouse, Hobart Bros., Miller Electric, Victor Equipment, Sight Feed Generator, Alloy Rod-Handy and Harman; and metalworking machinery built by Chicago Steel Press, Wallace, and Wiedemann. Hydraulic Press Mfg. Co. will exhibit a 125 ton plastic injection molding machine, a die casting machine, and a 20 ton laboratory press.

Acquires New Facilities

Detroit

• • • **Wyandotte** Chemicals Corp. has acquired the manufacturing facilities and clay deposits of Blue Mountain Clay Co., Inc., of Mississippi.

The new facilities will be used to produce Wyandotte Zorball, a claylike mineral with oil and water absorbent properties, according to a spokesman for the company.

Zorball is reported to have unusually low content of calcium and magnesium oxides. This product may be used to protect against fires in combustible wastes and is said not to turn to a slippery mud in oil or when completely saturated with water.

lore Workers Qualify For National Steel's Retirement Program

eirton, W. Va.

• • **The names of** 524 employees
Weirton Steel Co. and Weirton
al Co., now eligible to join the
tional Steel retirement annuity
an, were announced in the No-
mber edition of the Weirton
nployees Bulletin. The Plan pro-
des pension benefits for its mem-
rs after they have reached 65
ars of age, regardless of whether
not they continue working. It
s a membership of over 5100
ntributing members at the pres-
t time.

About 70 Weirton members of
e plan will retire this year and
rt to draw annuity checks for
e rest of their lives. In Weirton
d Isabella 253 "old timers" are
ceiving pension checks.

The Pension Plan was amended
n. 1, 1944, to permit any em-
oyee, who was at least 30 years
l, had not reached his 65th
thday, and had credited service
th the company of not less than
years, to become a member of
e plan. It is only possible now
join the plan the first year after
employee has qualified in age
d years of service.

Each year, those who become
gible are notified by the annuity
partment and given an oppor-
nity to join. If an employee de-
les not to join when he first be-
nes eligible, he is permanently
qualified from joining later.

The company pays in about $2
every $1 paid by the individual
ployee. Take the case of an em-
yee who reaches age 65, has
en a member of the plan for 30
rs, and had earnings which
eraged $225 a month during
t 30-year period. Such an em-
yee would start receiving a
eck of $63 a month for the rest
his life, whether he quit work
age 65 or not. This employee
uld have contributed $84 a year
30 years adding up to a total
estment of $2520. The return
this investment is $63 a month
$756 a year. At this rate, his
al contribution would be paid
k in exactly 3½ years. This
ment of $63 a month does not
p when the employee has all his
ney back, but continues as long
the employee lives.

contact

PERKINS

first for *custom-cut*

GEARS

We have manufactured precision gears to customers' specifications for nearly 30 years. Our production equipment comprises modern machine tools and our facilities are ample to meet all demands for the mass production and prompt delivery of such gears.

Our engineers will be glad to work with you on any problems you may have pertaining to gear design. Recommendations as to proper design for *LOWER COSTS*—cheerfully given. Once your specifications are in our files, reorders are filled automatically. *LET US QUOTE ON YOUR REQUIREMENTS NOW!*

YOU FURNISH THE SPECIFICATIONS • WE'LL PRODUCE THE GEARS

PERKINS MACHINE & GEAR Co., Springfield 2, Mass.

PERKINS MAKES in all materials, metallic & non-metallic:

Helical Gears, Bevel Gears, Ratchets, Worm Gears, Spiral Gears, Ground Thread Worms

Our extensive facilities and modern machine tools are also adaptable to the manufacture of all kinds of various parts other than gears, such as the following:

SPROCKETS · SPLINED SHAFTS · SCREW MACHINE PARTS

up to 2¼" in diameter.

We are also exceptionally well equipped to build, to your specifications, such mechanical units as—

PUMPS · SPEED REDUCERS & COMPLETE MACHINES

either in experimental or production quantities. Our well-known reputation is your guarantee of satisfaction. Let us quote on your requirements.

Double-Angle SHEARS

Another in the line of Thomas high-production tools. Typically sturdy Thomas construction and labor-saving design. Will cut or miter two angles at each stroke.

For further information ask for Bulletin 310.

THOMAS
MACHINE MANUFACTURING COMPANY
PITTSBURGH, 23, PA.

15

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There are many reasons why leading manufacturers everywhere insist upon Noblewest Rapid Production Marking Equipment. But the big reason is simply this—Noblewest has kept pace with industry's demand for constantly higher marking speeds and lower costs per unit marked. As a result Noblewest is, today, the world's leading manufacturer of rapid precision equipment for the permanent marking of metal, plastic, hard rubber, wood, etc. Why not put your marking problems up to Noblewest engineers? There's no obligation. Write Noble & Westbrook Manufacturing Company, 22 Westbrook Street, East Hartford 8, Conn.

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NOBLEWEST IMPROVED MARKING DEVICES
NOBLEWEST

Scientists Blow Soap Bubbles to Learn What Makes Metals Strong

Rochester, N. Y.

• • • **Scientists** have resorted to blowing soap bubbles in an effort to find out what makes metals strong, Sir Lawrence Bragg of Cambridge University, England, Nobel Prize winner in physics in 1915, reported in an address at a joint meeting of the Rochester Sections of the American Chemical Society and the Optical Society of America.

Soap bubbles, Sir Lawrence explained, have proved more useful than anything else tried so far in constructing a workng model of the crystal structure of a metal. A cluster of bubbles, he said, behaves much like the cluster of atoms making up a metal crystal, and lasts "an hour or so," which is long enough to permit experiments.

The bubble-blowing studies were undertaken because science as yet has no satisfactory theory of metal strength, despite the enormous amount of empirical knowledge about the mechanical properties of metal, which has been obtained through countless investigations of the metals and alloys so important in modern technology.

"On the theoretical side, we know the way atoms are arranged in the perfect structure of metal crystals, and the theoretical physicists can tell us much about the forces of attraction and repulsion which keep these structures together," he stated. "There is no bridge, however, between theory and the empirical knowledge of mechanical properties. We cannot calculate from first principles the point at which a metal ceases to respond elastically and yields with consequent permanent deformation."

The electric limit of metals is raised when they are "cold-worked," and also when a pure metal is alloyed with small proportions of other elements, he said, and this increase in strength apparently develops because the easy gliding of close-packed rows of atoms over one another is prevented by the cold work or the impurities. At present, however, here is no known way of expressng this relationship precisely.

The bubble model is composed f a mass of minute bubbles ormed by blowing air from a fine et under the surface of a soap olution. The bubbles, remarkably niform in size can be produced n enormous numbers at the rate f a thousand or more a second, o that enough of them to represent a relatively large crystal can e accumulated speedily, Sir awrence reported, adding that they crystallize beautifully in a lose-packed form." A range of izes between two millimeters and ne-tenth millimeter is used.

"In a qualitative way, the most ttractive feature of these bubbles s that they slip or glide along lose-packed rows just as a metal oes. It has long been suspected hat, in a metal, slip does not take lace by one whole row or sheet f atoms jumping simultaneously ver the row or sheet below: it kes place by a 'dislocation' startg at one end and running across, that the final result is that all ne atoms in the top row 'move on ne place' as compared with those elow.

"This is exactly what the bubles did, but they show other inresting properties as well. If e stir up a sheet of these bubes, it is like cold-working a etal—they are broken into a ass of small crystals and one n watch crystal growth take ace. Some of the crystals grow the expense of others, and beme larger. Then again, one can troduce a few bubbles of the rong size and so study the effect atoms of impurity.

"One can study places where e structure is faulty because veral bubbles are missing, and ese faults have very interesting atures which indicate that they ay play a large part in diffusion d other changes in atomic posin within the metal."

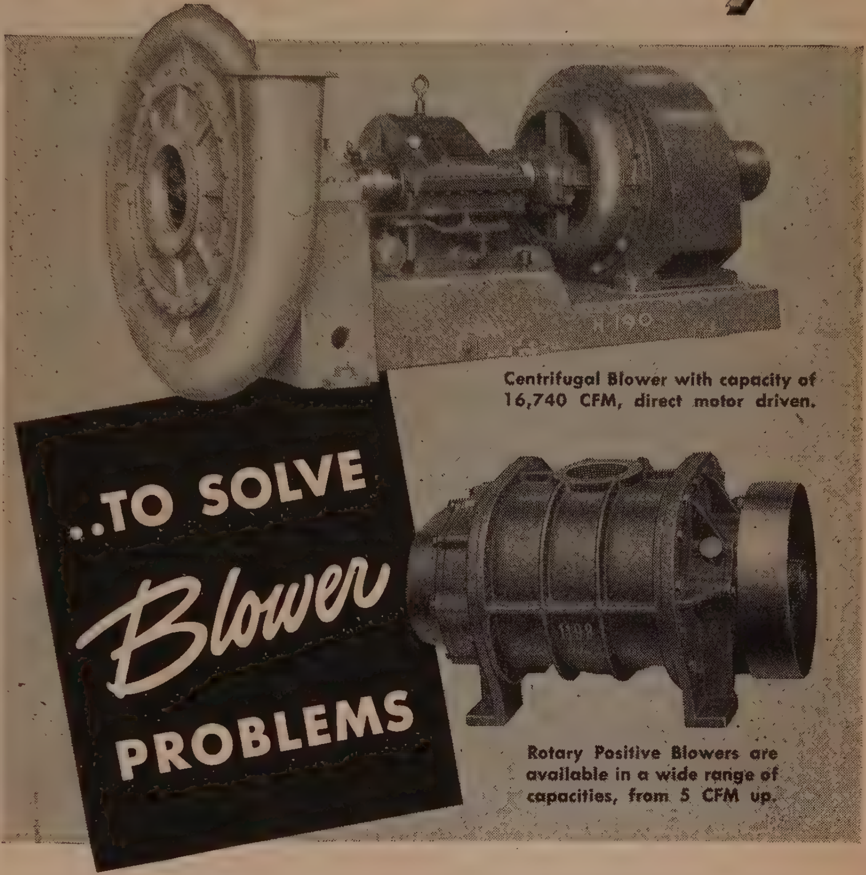
ve-Day Seminar Planned

w York

• • A private 5-day seminar on e organization and technique of andardization work, particularly individual companies, will be ld from Jan. 24 through Jan. 28, 49, in Room 503, Engineering cieties Building, 29 West 39th reet, New York City, by Dr. hn Gaillard.

CALL ON

R-C dual-ability



Centrifugal Blower with capacity of 16,740 CFM, direct motor driven.

Rotary Positive Blowers are available in a wide range of capacities, from 5 CFM up.

That's important—our *dual-ability* to supply either Centrifugal or Rotary Positive Blowers. It means that our recommendations are always unbiased. We suggest the equipment that experience has proved will best meet the specific conditions.

In the iron and steel industry, many factors influence this decision. Capacities, pressures, drives, dimensions, weight and other characteristics are carefully considered. First cost, operating economy and deliveries are important points.

Our wide experience enables us to make sound recommendations. The accuracy of our engineering and sturdiness of our blower construction have been proved for many years.

For practical, up-to-date answers to your blower problems, you can depend on R-C *dual-ability*.

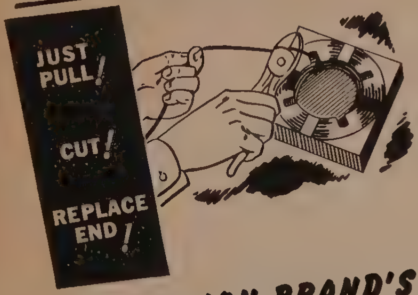
The first Rotary Positive Blower built by anyone was produced in the "Roots" plant in 1854—six years before the first pony express. We're not good because we're old, we're old because we're good!

ROOTS-CONNERSVILLE
BLOWER CORPORATION
811 Alabama Ave., Connersville, Ind.

ROOTS-CONNERSVILLE
ROTARY CENTRIFUGAL
BLOWER BUILDERS R-C SINCE 1854
BLOWERS • EXHAUSTERS • BOOSTERS • LIQUID AND VACUUM PUMPS • METERS • INERT GAS GENERATORS

★ ★ ONE OF THE DRESSER INDUSTRIES ★ ★

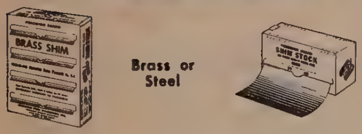
It's Easy to Use This MUSIC WIRE


JUST PULL!
CUT!
REPLACE END!

See PRECISION BRAND'S New Dispenser Carton

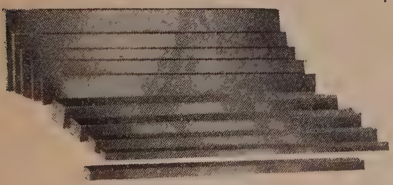
Save time, speed work with this top quality Music Wire packed in the ingenious dispenser carton—exclusive with Precision Brand. Wire is pulled from center; tension holds coil in place. Wire is cold drawn with micrometer precision to meet exacting requirements. Immediate delivery on a complete range of thickness .004 to .180 diameter.

SHIM STOCK



Whether you choose the dispenser carton, the four-in-one assortment or flat stock packets, you can depend upon Precision Brand quality, accuracy, protective packaging and plain labeling to help do the job right.

GROUND FLAT STOCK



A complete line in either oil or water hardening types! Precision ground to within .001"—ready for scribing, shaping, tempering drawing. Each piece oiled, wax wrapped in protective envelope, marked with size and heat treatment.

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GROUND FLAT STOCK · DRILL ROD · SHIM STEEL · BRASS SHIM · MUSIC WIRE · THICKNESS GAUGE STOCK · PRECISION BRAND

PRECISION STEEL WAREHOUSE, INC.
MANUFACTURING DIVISION
4409 WEST KINZIE ST., CHICAGO 24, ILL.

OIT Sets Fourth Quarter Aluminum Export Quota

Washington

• • • **An export quota** of 8500 tons of aluminum sheet, plate, and strip has been established for the fourth quarter of 1948, according to the Office of International Trade.

Aluminum sheets, plates, and strips were added to OIT's positive list on Aug. 25, 1948, and since that time have required licenses for shipment to any destination except Canada. For the balance of the third quarter, however, no overall ceiling was set on exports of these commodities.

Sufficient time has now elapsed to allow importing nations to provide OIT with statements of their aluminum requirements, and for OIT to evaluate these requirements against available supplies.

New Insulation in Lamps

Pittsburgh

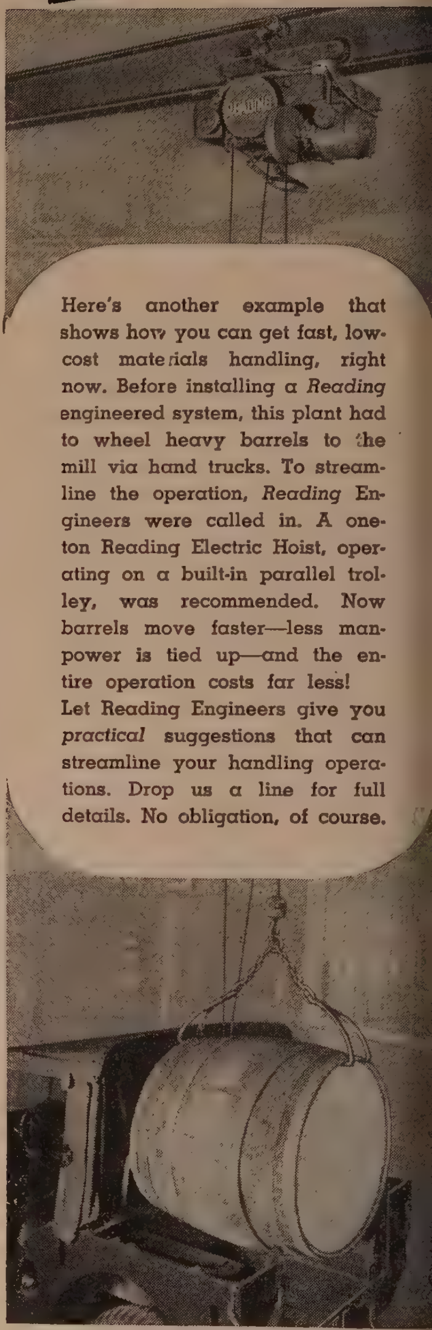
• • • **Fiberglas cloth** is being employed as a series cutout between the lead-in wires inside lamps used on the New York subway where 20 lamps are operated in series on a 600 v d-c circuit. The nominal operating voltage of each lamp is 30 v.

By inserting the Fiberglas between the lead-in wires in the Westinghouse gas-filled lamps, the necessary critical spacing is maintained. A strap of nickel around the wires holds them tight against the Fiberglas.

When the filament in any of the twenty lamps fails, the series circuit is momentarily broken and a potential of 600 v is impressed across the lead-in wires of the failed lamp. An immediate insulation breakdown occurs through the interstices of the Fiberglas as the gas acts as a conductor. The result is a fusing together of the wires to maintain the series circuit. The cutout will operate without failure at 200 volts when sealed in the lamp at 500 volts in the open air.

By means of a quality control test devised by Westinghouse engineers, it is possible to check the breakdown characteristics of this type of cutout before it is sealed into the lamp without destroying its usefulness.

HOW ONE PLANT Streamlines MATERIAL HANDLING



Here's another example that shows how you can get fast, low-cost materials handling, right now. Before installing a *Reading* engineered system, this plant had to wheel heavy barrels to the mill via hand trucks. To streamline the operation, *Reading* Engineers were called in. A one-ton Reading Electric Hoist, operating on a built-in parallel trolley, was recommended. Now barrels move faster—less manpower is tied up—and the entire operation costs far less!

Let Reading Engineers give you *practical* suggestions that can streamline your handling operations. Drop us a line for full details. No obligation, of course.

READING CHAIN & BLOCK CORPORATION
2101 ADAMS ST., READING, PA.

CHAIN HOISTS • ELECTRIC HOISTS
OVERHEAD TRAVELING CRANES

READING HOISTS

urth Quarter Export Quotas of Steel Mill Products Are Released

shington

• **Export quotas** for steel mill
ducts covered by quantity lim-
ions, as set by the Office of
ernational Trade, will approxi-
te a total of slightly more than
illion tons for the fourth quar-
1948.

These fourth quarter quotas in-
de all presently approved re-
rements of special projects
road which are considered of
al interest to the United States.
l products quotas for the last
arter, by commodity and ton-
ge, are as follows:

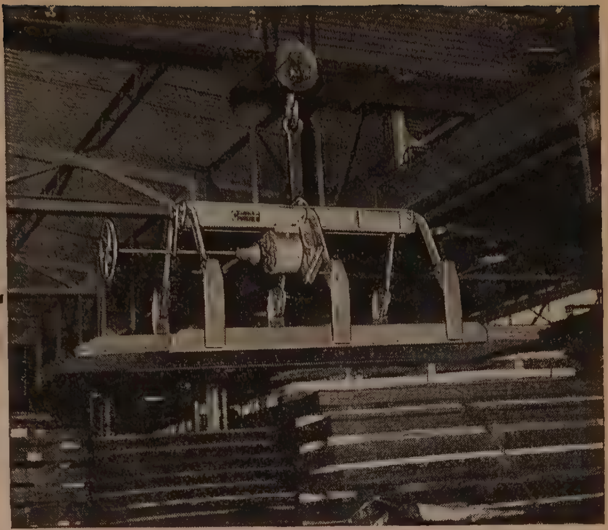
on-alloy ingots, 20,500; billets, blooms and
s, 32,500; sheet and tinplate bars, 1000;
(including stainless) ingots, 500; billets,
ms and slabs, 4500; steel bars, cold-fin-
d, including nonalloy, and alloy, except
nless, 17,000; concrete reinforcement bars
ormed and twisted bars only), 35,000; iron
, other steel bars and rods (hot rolled)
aining no alloy, 125,000*; other steel bars
rods (hot rolled) alloy steel, except stain-
17,000; wire rods, except specialty steel,
00; boiler plate, other plates, except fabri-
d (hot and cold rolled included) containing
alloy, 90,000; other plates, except fabri-
d (hot and cold rolled included) alloy
l, except stainless, 1500; skelp iron and
l, 500.

on sheets, galvanized, steel sheets, galvan-
, 15,000; steel sheets, black, ungalvanized
and cold rolled included) containing no
y, iron sheets, black, 84,000; steel sheets,
k, ungalvanized (hot and cold rolled in-
ed) alloy, except stainless, 14,000; iron and
l strip, cold rolled, containing no alloy,
and steel hoop, band, and scroll, cold
ed, containing no alloy, iron and steel
, hot rolled, containing no alloy, iron and
l hoop, band, and scroll, hot rolled, con-
ing no alloy, 30,000.

ater, oil, gas, and other unlined storage
s, complete and knockdown material for
porary or permanent installation, n.e.s.,
00; structural shapes, except fabricated,
00; structural shapes, fabricated, except
abricated houses, 51,000; penstock, 5000;
es, fabricated, punched, or shaped, n.e.s.,
; sheet piling, 9800; rails, 60 lb and over
yd, 60,000; rails, under 60 lb per yd, 6500;
ying rails, 20,000; rail joints, splice bars,
plates and tie plates, 18,500.

oiler tubes, iron and steel: seamless,
led, 13,000; casing and oil-line pipe: seam-
70,000; welded, 37,000; seamless black
except casing, oil-line and boiler, 9000;
eable iron screwed pipe fittings, 150-lb.
sure and under, floor drains, cast iron;
the following iron and steel pipe fittings,
n 150-lbs. pressure and under: couplings;
anized pipe fittings, malleable iron pipe
ngs; pipe joints, gray iron, extension; pipe
les, lap-welded, black; pipe plugs; pipe
ns; screw elbows; swage nipples, 5300;
iron pressure pipe, pipe fittings, 12,000;
ed black pipe, steel, 18,000; welded black
wrought iron, welded galvanized pipe,
ught iron, 3000; welded galvanized pipe,
, 14,000; iron and steel pipe, n.e.s.,
00; iron and steel wire, uncoated, 17,500;
anized wire, 17,500; barbed wire, 12,500;
en-wire fencing, 4000; wire cable and
except insulated, 6900; baling wire,
k, annealed; coils, cold finished; musical
ument wire; piano wire; spring wire,
nt steel, for musical instruments, 2000.

ire nails (including wire shoe nails), nails:
stos shingler; cut (including cut shoe
); roofing, lead-headed; shingle; siding,
-coated; smooth flat head, cement-coated,
; castings and forgings, iron and steel:
way car wheels, except locomotive; rail-
car axles, without wheels, except locomo-
railway car axles, fitted with wheels,
pt locomotive, 8000**: iron and steel forg-
n.e.s. (except railway car wheels, tires,
axles, and horseshoes and mule shoes):



Save TIME *Save* SHEETS

Handle Sheets with

C-F LIFTERS

Handle loose or bundled sheets with one of these C-F Lifters and you save TIME and SHEETS, because C-F Lifters, under one man end control, can handle more sheets per load safer, faster and more economically. Tong action grips loads tightly, yet design features like wide bearing surfaces give full protection to stock edges. End control of C-F Lifters permits closer stocking of piles—resulting in more efficient use of storage facilities.

C-F Lifters are available in capacities from 2 to 60 tons or larger, in standard or semi-special designs.

Write for the bulletin "C-F Lifters"

CULLEN-FRIESTEDT CO.
1303 S. Kilbourn Ave., Chicago 23, Ill.

HANDLE SHEETS
with
C-F LIFTERS

For Safe and Economical Results, Use . . .

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"HERCULES" (RED-STRAND) WIRE ROPE

The experience of many wire rope users has proved that they can depend on Preformed "Hercules" (Red-Strand) Wire Rope for top-flight performance. Its easy handling . . . its smooth spooling . . . its unusual endurance—make for faster work, longer life and lower operating cost.

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the DEPENDABLE
WIRE ROPE
for any TOUGH JOB
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ESTABLISHED 1857
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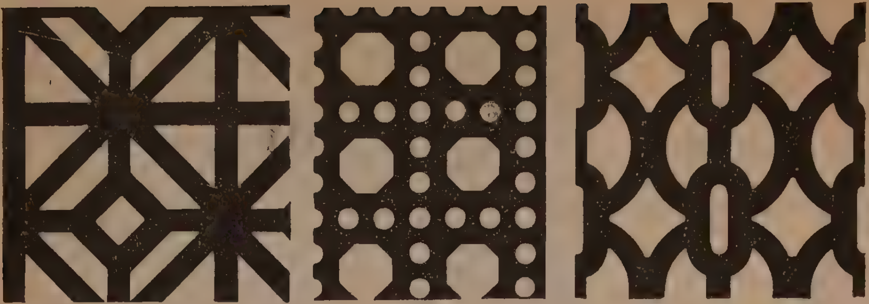

Ornamental perforated metal

Hendrick offers a wide variety of decorative patterns in light weight, perforated metal, for radiator enclosures, stove panels, kitchen cabinets, and similar applications.

Regularly furnished in steel sheets of available stock size, in gauges from 16 to 22. These patterns can also be supplied in other metals on special order. Write for full information.

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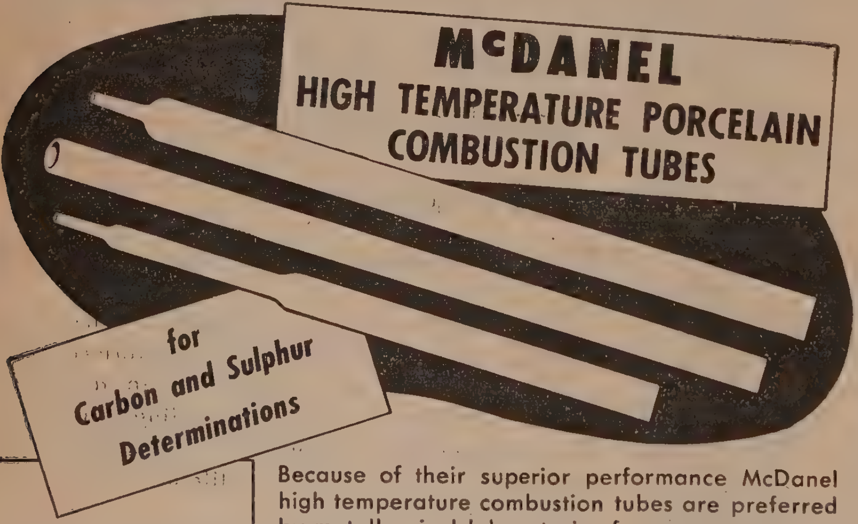
HENDRICK

Manufacturing Company

37 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

Perforated Metals
Perforated Metal Screens
Architectural Grilles
Mitco Open Steel Flooring,
"Shur-Site" Treads and
Armorgrids


McDANEL
HIGH TEMPERATURE PORCELAIN COMBUSTION TUBES
for Carbon and Sulphur Determinations

OTHER McDANEL PRODUCTS

- Self-cooling Combustion Tubes.
- High Temperature Combustion Tubes.
- Refractory Porcelain Specialties in stock or designed to meet specific needs.

Specify McDanel High Temperature Combustion Tubes from your supplier.

Because of their superior performance McDanel high temperature combustion tubes are preferred by metallurgical laboratories from coast to coast. McDanel Tubes are laboratory controlled from the mixing of the batch to the grinding for stopper tightness. Proper density, accurate bore size, wall thickness, etc. must be right before tubes are passed for shipment. That is why McDanel Tubes serve better and last longer and that is why McDanel Tubes are so generally preferred.

Straight, tapered, or double reduced self-cooling ends.

McDanel Refractory Porcelain Co.
Beaver Falls . . . Penna.

containing no alloy, alloy steel (stainless included) 9,000; surplus iron and steel, 15,000***,

---

NOTE:

* Not more than 40 pct may be licensed in sizes one in. and under; also, not more than 20,000 short tons may be licensed for tube rounds.

** Provided that no more than 2000 short tons is for steel wheels and axles, and at least 700 tons are used materials.

*** A fourth quarter 1948 quota of 15,000 short tons has been established for surplus iron and steel, irrespective of Schedule B classification, provided that any export quota herein announced may not be increased by more than 15 pct as a result of approvals of licenses for the same product as surplus iron and steel, and that not more than 25 pct of the 15,000 short tons may be licensed against any one quota of iron and steel products.

Bituminous Coal Research Has Opened Branch Office

Pittsburgh

• • • **To maintain** close contact with expanding research activities and to expedite the application by industry of the research being conducted by the bituminous coal industry's research organization, Bituminous Coal Research, Inc., on Nov. 1, opened a branch office at 488 West Sixth Ave., Columbus, Ohio.

The Columbus office, in charge of Elmer R. Kaiser, assistant director of research, will provide Battelle Memorial Institute with closer sponsor contacts on BCR projects on which approximately half of the BCR budget is spent. The office will be within three blocks of the institute's main building.

Assisting in the second important phase of the work, James R. Garvey, development engineer, will be active on the commercial development of smokeless residential heating equipment in cooperation with manufacturers. Smokeless stoves, a cooking range, warm air furnaces, heating boilers, and a stoker-boiler are among these products.

Says Pegged Currencies Hampering World Trade

San Francisco

• • • **Wildcat currencies** are throttling international trade, according to James D. Mooney, president and board chairman of Willys-Overland Motors.

Speaking before the Commonwealth Club, the automotive executive asserted that current difficulties in world trade are the result of "pegged currencies and artificial restrictions that keep the world's currencies from finding a realistic relationship—first to gold

AREHOUSE
STOCKS
OF

LLOY BARS

ROUNDS
SQUARES
HEXAGONS

Hot Rolled.
2" to 10" Rd.

Cold Drawn.
8" to 4½" Rd.
/16" to 2" Sq.
" to 2½" Hex.

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MS—6260
6270
6272
6280
6322
6324
6415
6320 Hex.

BESSEMER

B1113

CARBON

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FORGINGS

WRITE FOR
UR MONTHLY
STOCK LIST

HY-ALLOY STEELS CO.

30 N. LASALLE
CHICAGO 2, ILL.
RAN 5253

and second to each other in terms of gold and of world prices for commodities."

Mooney vigorously denied that the big obstacle to increasing America's foreign trade is the international dollar shortage, as maintained by some observers.

"The so-called dollar shortage," he declared, "is really only a nice-sounding name to hide the fact that paper currencies are not worth what they once were, either in internal or foreign purchasing power.

"All of the foreign paper currencies are in disrepute even with their own nationals because they are known to bear a false, or at least unknown, relationship to gold."

Steel Co. of Canada Stresses Demand And Shortage of Scrap

Toronto

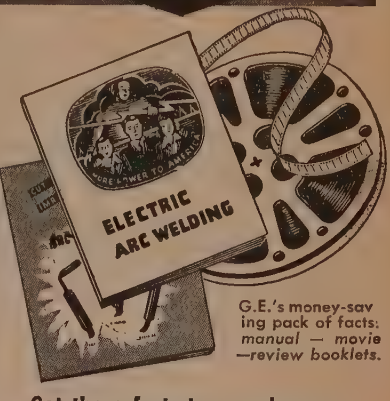
• • • **Demand for** all products produced by the Steel Co. of Canada, Ltd., continues well in excess of supply with no indications of improvement, according to a company report. During the first 9 months of this year sales were 29 pct greater than for the same period of 1947, due to the larger tonnage sold and higher prices necessitated by increased costs, the company reports.

The problem of securing supplies of scrap adequate to maintain the present high level of steel production in Canada gives cause for grave concern and the absolute necessity of getting all available scrap moving to the mills is being stressed.

"In view of the high proportion of Canada's steel production which was exported during the war for combat needs, it is hoped that some reasonable proportion of the scrap being exported from Germany may be allocated to this country by the United States and British occupation authorities," the company says. Otherwise, the threat of curtailment of steel production because of scrap shortage may become most serious.

The company's program of plant expansion continues to absorb important amounts of new capital. For the first 9 months this year these expenditures reached almost $10.5 million and a further amount of $9 million will be needed.

METAL FABRICATOR
CUTS COSTS 67 PER CENT
—CAN YOU?



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Examine the General Electric *Electric Arc Welding Manual* free of charge. It covers every phase of arc welding from a list of welding services for the user to specific examples of production feats in plants like yours. It provides *up-to-date* data about available equipment, power supply requirements, design and safety measures. It's written by experts, *without sales bias*, in a language your men can easily understand. Look through it. Satisfy yourself that it will pay off in your plant, then—

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Your key personnel will enjoy learning the newest facts on arc welding in this modern, absorbing, *visual* way. Here's a thirty-minute General Electric sound film in full color that wallops across its ideas—actually *shows* you precisely how arc welding is building better products cheaper in plants like yours. It's prepared by arc-welding specialists in terms that are grasped readily. Show it to your key men and—

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They're ideal for individual study and review. Have as many as you like, but—

ACT NOW! Don't delay. Remember—today's arc welding offers you unprecedented opportunities to cut costs, improve quality, lick difficult production problems. So start the ball rolling by filling in the coupon below, and we'll rush you a copy of the G-E *Electric Arc Welding Manual*. Do it *now!*

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GENERAL ELECTRIC

Sales Volume Decline Indicates Possible Planning Readjustment

Longshoremen's Strike Causes Demurrage To Pile Up On Shipments For Abroad

○ ○ ○

• • • **Release of** funds by France for purchase of machine tools and repair parts, and a seasonal but apparently rather limited cleanup of appropriation money by domestic customers in various sales sectors was under way this week, providing an otherwise bleak machine tool market with a few bright spots.

France released $5 million for machine tools and repair parts, of which a reported $2,600,000 will be spent in this country, with the balance going to the British. Trade sources were quick to seize upon this as fragmentary but important evidence that the bottleneck in ECA machine tool business has been broken.

On the other hand, the East Coast longshoremen's strike is holding up machine tool shipments abroad, and the problem of demurrage is rearing its ugly and expensive head between machine tool builder and buyer.

The current decline in sales volume in the machine tool industry has prompted some observers to remark that the industry is in for a period of amalgamations, mergers, and radical planning readjustments. Some of this has been seen already.

In Detroit machine tool volume continues far below the levels of the past few years. Builders of specialized equipment in particular are very hard hit. No major tooling programs are in sight here and a recent postponement of the introduction of an automatic transmission for one of the independent car producers has snuffed out, temporarily at least, one of the more promising programs.

Meanwhile, Chevrolet is moving forward, it is reported, with the tooling of its Saginaw plant. Informed sources here now believe Chevrolet may be in a position to offer the car buyer an automatic transmission by midsummer 1949. Present indications now are that any Ford transmission will lag considerably behind this.

Limited ordering by tool shops continues according to some segments of the industry. Expiration of leases on equipment has stirred up some activity here within recent weeks. In some cases, however, the needs are being filled by transfers of machines; others are buying used equipment. It is expected, however, that a sizable volume of orders will eventually result from the present inquiries.

Sellers of machine tools in the Chicago area will consider themselves lucky if their volume for 1948 is equal to last year. For the first 9 months of this year they were ahead, but fourth quarter business has been very poor. They recall that fourth quarter sales last year were terrific.

Deliveries of standard tools can be made in many cases from stock. At times the buyer waits from 3 to 4 weeks, but seldom does he have to wait any longer. Some deliveries remain tight on special equipment. Heavy duty presses show a sizable backlog. Scrap baling presses are being quoted on an 18-month delivery basis by some makers in this area.

The tool program for Deere & Co. in Des Moines has about been completed. This program amounted to almost $1 million and was placed about a year ago. Lately this company has placed some small orders to round out their facilities.

Tool and die shops in this area are next to dead. Machine toolmakers are enthusiastic over the approach the ordnance engineers are employing in their phase on defense planning. These men in laying out tentative plans are not figuring on using obsolete methods or equipment. Their approach is, "Well, here's how you did it last time—now how is the best and fastest way to do it today or next year?"

This means new equipment will be employed in all possible cases in the old plants that made ordnance material during the war. Of course, no orders have been placed, but should the international situation boil over, the machine tool industry will know precisely what kind of equipment will be required in each of the plants that the ordnance engineers have surveyed.

In Philadelphia, despite a large increase in the volume of inquiries since the election, there has been no change in orders, which continue in pre-election low volume. Present inquiries are thought to be largely for budget purposes and proposed for early 1949 purchase.

Dealers are rather pessimistic, with volume low and sales outlook indefinite. No large buying programs are on the horizon at present, nor have there been concrete developments in the Westinghouse Kansas City jet engine plant. Approval for expenditures has not been released, but inquiries have been placed on competitive lines of tools. Apart from this program there are probably few tool-buying industries in this area where the current order backlogs are large enough to justify important purchases of new production equipment.

Standard tool deliveries are very good, a matter of 2 to 3 weeks. A producer of lathes raised prices 10 pct last week, reflecting an upward adjustment to meet the level of price advances taken by other builders. Trade sources do not, however, anticipate further machine tool price increases in the near future.

Speed cutting-off Service

Crucible Steel Started Something

11 years ago Crucible Steel Company's Chicago warehouse started something when they installed their first MARVEL Saws to give fast service on "cut to size" orders. Today, 9 Crucible Steel Company warehouses are equipped with MARVEL Saws. Each warehouse can deliver accurately cut-off lengths or slices from even the largest bars and billets on short notice; or literally thousands of identical pieces cut-off automatically from single or nested bars at terrific speed.

The above picture of the new cutting-off department in Chicago shows two No. 18 MARVEL Giant Hydraulic Saws (capacity 18″ x 18″) and two No. 9A MARVEL Automatic Production Saws (capacity 10″ x 10″).

There are MARVEL-equipped Crucible Steel Company warehouses in:

- **CHICAGO**
- **INDIANAPOLIS**
- **ST. LOUIS**
- **CLEVELAND**
- **DETROIT**
- **DENVER**
- **NEW YORK**
- **PHILADELPHIA**
- **BOSTON**
- **PITTSBURGH**

SAWING DEPT.
ONE 18″ X 18″ MACHINE
ONE 18″ X 22″ MACHINE
THREE 10″ X 10″ MACHINES
ONE BAND SAW
WITH THIS EQUIPMENT WE CAN CUT YOUR ORDER THE SAME DAY RECEIVED.

ARMSTRONG-BLUM MFG. CO.
"The Hack Saw People"
5700 Bloomingdale Ave. Chicago 39, U. S. A.

MARVEL *Metal Cutting* **SAWS**
Better Machines—Better Blades

Scrap Men and Producers Play Hop, Skip and Jump with Price

Metal Shortages Continue So Severe Buyers Are Unable To Keep Up Operations

° ° °

New York

• • • **Following the** adoption of the 2¢ zinc increase by all producers last week, upward revisions of alloy brass mill products have been announced by the American Brass Co. and Bridgeport Brass Co. These increases were accompanied by increases of ½¢ to ⅞¢ per lb in brass mill scrap buying prices for some alloy grades. Although other mills had not taken similar action early this week, present indications are that it will be universal by the end of the week.

Secondary aluminum ingot producers raised prices by ½¢ to 1¢ per lb last week, reflecting further increases in the price of scrap. Some grades of remelted ingots are quoted now at more than 30¢ per lb. Foundries are overanxious to buy even at these prices and in view of the shortage of scrap are building up the price of the metal. Current prices reflect increases in scrap and ingots made week after week ever since the end of the summer.

The shortage of ingots has grown so severe that some factors in the trade are canvassing the possibility of having an admittedly high cost virgin ingot producer taken over by some group who would operate it temporarily to produce and sell high priced primary ingots to foundries. The thought is that the pinch for scrap is so strong that present demand might well force scrap and secondary ingot prices even higher. Adequate alumina for the operation of a presently inactive reduction plant could be made available readily by primary producers. It is conceivable that if power could be bought even as high as 9¢ per lb of ingot, there might be a significant saving in the price of ingots to foundries. Primary producers consider a power cost of 3¢ per lb of aluminum the maximum that would permit sale at present pig and ingot prices.

A step in this direction has already been taken by the Aluminum Research Institute when it made an informal bid for the operation of the government's Massena, N. Y. reduction plant for this purpose. The plant was recently bought by the Aluminum Co. of America at a price of $5 million. The two remaining reduction plants which could be used for such a purpose include the ones at Burlington, N. J. and River Bank, Calif. These plants have only high priced power available to them.

Prices of brass and zinc scrap grades also increased again last week by an average of ½¢ per lb.

Important shortages continue in copper, lead and zinc with buyers unable to obtain enough metal to carry on operations. Premium prices for foreign and secondary metals are continuing, and are being paid by consumers in view of the shortages. Producers of zinc say that requirements of die casters are down by 10 pct to 15 pct. But this is only a temporary condition and they are expected to be back in the market soon for
usual requirements. The recent i
crease in zinc has caused no a
parent easing off of demand.

The strike at the Kennecott Co
per Co. operations in Utah is co
tinuing and is creating an u
fortunate situation for consumer
In view of the continuation of th
strike and the prevalence of th
heavy demand on the scrap marke
by all factors, most observers se
the probability of a price increas
in the immediate future. There ar
no important tonnages available t
meet the active demand. All fa
tors in the market except one a
pricing copper on the basis of pric
prevailing on the date of shipmen
This action is necessary to prote
producers against loss.

The meetings of the Dept. c
Commerce Office of Internationa
Trade with metals producers i
Washington last week resulted i
no conclusive developments or a
tion to be taken to limit current e
ports of bonded metal. Such actio
would be impossible without jeo
ardizing the tonnages of impor
of ores and concentrates into th
country. However, industry me
bers report that there were redu
tions in fourth quarter expo
quotas of domestic zinc and so
lead products.

Nonferrous Metals Prices

	Nov. 17	Nov. 18	Nov. 19	Nov. 20	Nov. 22	Nov. 23
Copper, electro, Conn.	23.50	23.50	23.50	23.50	23.50	23.50
Copper, Lake, Conn.	23.625	23.625	23.625	23.625	23.625	23.625
Tin, Straits, New York	$1.03	$1.03	$1.03	$1.03	$1.03	$1.03
Zinc, East St. Louis	17.50	17.50	17.50	17.50	17.50	17.50
Lead, St. Louis	21.30	21.30	21.30	21.30	21.30	21.30

Says ECA Helps Business When Used as Intende

Buffalo

• • • **The Economic** Co-operati
Administration "can help us
business if we use it the way it
intended we use it," Americ
businessmen eyeing foreign ma
kets were told at the second Ma
rials Handling Conference spo
sored by the Westinghouse Ele
tric Corp.

D. E. Akins, manager of t
apparatus division of the Westin
house Electric International C
said:

"It is sometimes mistakenly b
lieved that ECA is a purchasi
and financing agency, which is f
from the truth.

NONFERROUS METALS PRICES

Primary Metals

ents per lb, unless otherwise noted)

minum, 99+%, 10,000 lb, freight llowed	17.00
minum pig	16.00
imony, American, Laredo, Tex.	38.50
yllium copper, 3.75-4.25% Be ollars per lb contained Be	$24.50
yllium aluminum 5% Be, dollars er lb contained Be	$52.00
mium, del'd	$2.00
alt, 97-99% (per lb)	$1.65 to $1.72
per electro, Conn. Valley	23.50
per, lake, Conn. Valley	23.625
d, U. S. Treas., dollars per oz.	$35.00
ium, 99.8%, dollars per troy oz.	$2.25
ium, dollars per troy oz.	$110 to $115
d, St. Louis	21.30
d, New York	21.50
gnesium, 99.8+%, f.o.b. Freeport, ex.	20.50
gnesium, sticks, carlots	34.50
rcury, dollars per 76-lb flask, o.b. New York	$78 to $80
kel, electro, f.o.b. New York	42.90
ladium, dollars per troy oz.	$24.00
tinum, dollars per troy oz.	$93 to $96
er, New York, cents per oz.	73.75
. Grade A, New York	$1.03
, East St. Louis	17.50
, New York	18.15
onium copper, 10-12 pct Zr, per contained Zr	$12.00

Remelted Metals

Brass Ingot

ublished prices, cents per lb delivered, carloads)

-5-5 ingot		
o. 115	21.50*	22.00
o. 120	21.00*	21.50
o. 123	20.50*	21.00
0-10 ingot		
o. 305	....	27.25
o. 315	. .	24.25
0-2 ingot		
o. 210	. ..	33.00
o. 215	..	31.00
o. 245	25.75*	25.75
low ingot		
o. 405	17.50*	17.50
nganese bronze		
o. 421	....	23.00

F.o.b. Philadelphia.

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

aluminum-silicon alloys	
30 copper, max.	31.25–31.75
60 copper, max.	30.75–31.25
on alloys (No. 122 type)	26.50–27.00
12 alum. (No. 2 grade)	26.25–26.75
alloy	26.50–27.00
alloy	27.00–27.25
alloy	31.00–31.50
S-679	27.25–27.75

Steel deoxidizing aluminum, notch-bar granulated or shot

de 1—95 pct-95½ pct.	28.75–29.50
de 2—92 pct-95 pct.	27.75–28.50
de 3—90 pct-92 pct.	26.75–27.50
de 4—85 pct-90 pct.	26.25–26.75

Electroplating Supplies

des

(Cents per lb, freight allowed, in 500 lb lots)

per	
ast, oval, 15 in. or longer	40⅛
lectrodeposited	34⅜
olled, oval, straight, delivered	37.34
all anodes	38⅜
ss, 80-20	
ast, oval, 15 in. or longer	35⅞
, oval, 99.99	
all anodes	
kel 99 pct plus	
ast	59.00
olled, depolarized	
mium	$2.10
er 999 fine, rolled, 100 oz. lots, r troy oz, f.o.b. Bridgeport, onn.	81

micals

Cents per lb, f.o.b. shipping point)

per cyanide, 100 lb drum	46.00
per sulfate, 99.5 crystals, bbls.	9.10
el salts, single or double, 100 lb gs, frt. allowed	18.50
el chloride, 300 lb bbl.	24.50
r cyanide, 100 oz. lots, per oz.	61
um cyanide, 96 pct domestic 0 lb drums	16.00
sulfate, crystals, 22.5 pct, bags	
sulfate, 25 pct, granules, bbls. . allowed	

Mill Products

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 26.9¢; 4S, 61S-O, 28.8¢; 52S, 30.9¢; 24S-O, 24S-OAL, 29.8¢; 75S-O, 75S-OAL, 36.3¢; 0.081 in., 2S, 3S, 27.9¢; 4S, 61S-O, 30.2¢; 52S, 32.3¢; 24S-O, 24S-OAL, 30.9¢; 75S-O, 75S-OAL, 38¢; 0.032 in., 2S, 3S, 29.5¢; 4S, 61S-O, 33.5¢; 52S, 36.2¢; 24S-O, 24S-OAL, 37.9¢; 75S-O, 75S-OAL, 47.6¢.

Plate: ¼ in. and heavier: 2S, 3S, F, 23.8¢; 4S-F, 26¢; 52S-F, 27.1¢; 61S-O, 26.6¢; 24S-F, 24S-FAL, 27.1¢; 75S-F, 75S-FAL, 33.9¢.

Extruded Solid Shapes: Shape factors 1 to 4; 35.1¢ to 66¢; 11 to 13, 36.1¢ to 78¢; 23 to 25, 38.2¢ to $1.07; 35 to 37, 45.7¢ to $1.65; 47 to 49, 67.5¢ to $2.41.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 34¢ to 30.5¢; Cold-finished, 0.375 to 3.5 in., 2S, 3S, 36.5¢ to 32¢.

Screw Machine Stock: Drawn, ⅛ to 11/32 in., 11S-T3, R317-T4, 49¢ to 38¢; cold-finished, ⅜ to 1½ in., 11S-T3, 37.5¢ to 35.5¢; ⅜ to 2 in., R317-T4, 36.5¢ to 33.5¢; rolled, 1 9/16 to 3 in., 11S-T3, 35.5¢ to 32.5¢; 2⅛ to 3⅜ in., R317-T4, 32.5¢ to 31.5¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.: 2S, 36¢ to 26.5¢; 52S, 44¢ to 32¢; 56S, 47¢ to 38.5¢; 17S-T4, 50¢ to 34.5¢; 61S-T4, 44.5¢ to 34¢; 75S-T6, 76¢ to 55¢.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed Base quantity 30,000 lb)

Sheet and Plate: Ma, FSa, ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-74¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher.

Extruded Round Rod: M, diam. in., ¼ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢; 2½ to 5, 41¢. Other alloys higher.

Extruded Square, Hex. Bar: M, size across flats, in., ¼ to 0.311, 61¢; ½ to 0.749, 48¢; 1¼ to 1.749, 44¢; 2½ to 4, 42¢. Other alloys higher.

Extruded Solid Shapes, Rectangles: M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb. per ft. per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.14; 5/16 to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢. 0.065 to 0.082, ⅜ to 7/16, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢. 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher.

Nickel and Monel

(Cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	60	47
Strip, cold-rolled	66	50
Rods and shapes		
Hot-rolled	56	45
Cold-drawn	56	45
Angles, hot-rolled	56	45
Plates	58	46
Seamless tubes	89	80
Shot and blocks	..	40

Copper, Brass, Bronze

(Cents per pound, freight prepaid on 200 lb)

	Extruded Shapes	Rods	Sheets
Copper	36.78	....	37.18
Copper, hot-rolled	....	33.28	....
Copper, drawn	....	34.28	....
Low brass	38.57*	35.35	35.66
Yellow brass	37.60*	34.28	34.59
Red brass	38.92*	35.70	36.01
Naval brass	33.92	32.67	38.61
Leaded brass	....	28.30	....
Commercial bronze	39.54*	36.57	36.88
Manganese bronze	37.51	36.01	42.11
Phosphor bronze, 5 pct	57.80*	56.30	56.05
Muntz metal	33.47	32.22	36.66
Everdur, Herculoy, Olympic, etc.	40.43	40.67	41.73
Nickel silver, 10 pct	....	46.42	44.20
Architectural bronze	....	....	32.33

* Seamless tubing.

Scrap Metals

Brass Mill Scrap

(Cents per pound; add 1¢ per lb for shipments of 15,000 or more)

	Heavy	Turnings
Copper	21¼	20¾
Yellow brass	18⅞	18⅛
Red brass	20	19
Commercial bronze	20⅛	19
Manganese bronze	17¾	16⅞
Leaded brass rod ends	17¾	

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery.)

No. 1 copper wire	20.50–21.00
No. 2 copper wire	19.50–20.00
Light copper	18.50–19.00
Refinery brass	18.50*–18.75*

* Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer.)

No. 1 copper, wire	19.75
No. 2 copper, wire	18.75
Light copper	17.75
No. 1 composition	16.75–17.00
No. 1 comp. turnings	16.50–16.75
Rolled brass	13.00–13.50
Brass pipe	13.25–13.75
Radiators	14.00
Heavy yellow brass	12.50–12.75

Aluminum

Mixed old cast	16.50
Mixed old clips	16.75
Mixed turnings, dry	14.50
Pots and pans	16.75
Low copper	19.00

Dealers' Scrap

(Dealer's buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	18½—19
No. 2 heavy copper and wire	17½—18
Light copper	16½—17
Auto radiators (unsweated)	12¾—13
No. 1 composition	15 —15½
No. 1 composition turnings	14½—15
Clean red car boxes	12½—13
Cocks and faucets	12½—13
Mixed heavy yellow brass	9½—10
Old rolled brass	12 —12½
Brass pipe	13 —13½
New soft brass clippings	15 —15½
Brass rod ends	13 —13½
No. 1 brass rod turnings	12½—13

Aluminum

Alum. pistons and struts	8½— 9
Aluminum crankcases	12½—13
2S aluminum clippings	16½—17
Old sheet & utensils	12½—13
Borings and turnings	6 — 6½
Misc. cast aluminum	12½—13
Rural clips (24S)	12½—13

Zinc

New zinc clippings	11½—12
Old zinc	10 —10½
Zinc routings	5¾— 6¼
Old die cast scrap	6¾— 7¼

Nickel and Monel

Pure nickel clippings	22 —23
Clean nickel turnings	17 —18
Nickel anodes	22 —23
Nickel rod ends	21 —22
New Monel clippings	15½—16½
Clean Monel turnings	11 —12
Old sheet Monel	13 —14
Old Monel castings	10 —11
Inconel clippings	12 —13
Nickel silver clippings, mixed	8 — 8½
Nickel silver turnings, mixed	7 — 7½

Lead

Soft scrap lead	20 —20½
Battery plates (dry)	13 —13½

Magnesium Alloys

Segregated solids	8 — 9
Castings	4½— 5½

Miscellaneous

Block tin	82 —84
No. 1 pewter	65 —67
No. 1 auto babbitt	51 —53
Mixed common babbitt	20 —20½
Solder joints	22½—23½
Siphon tops	50 —52
Small foundry type	21½—22
Monotype	20½—21
Lino. and stereotype	20 —20½
Electrotype	18½—19
New type shell cuttings	16½—17
Hand picked type shells	7½— 8
Lino. and stereo dross	11½—12
Electro dross	8 —8½

How to S-T-R-E-T-C-H your Steel Supply

It's really simple. Just use "the steels that do more"- U·S·S Cor-Ten or U·S·S Man-Ten—in place o carbon steel. And your steel supply will go *one-thir* farther.

By taking advantage of the higher physical prop erties of these high-strength steels, you can use thinne sections to produce units that weigh one-fourth les . . . that are substantially stronger and more durabl . . . that require one-fourth less steel per unit. As result, in many cases, you can produce as much as one third more units from every ton of steel used.

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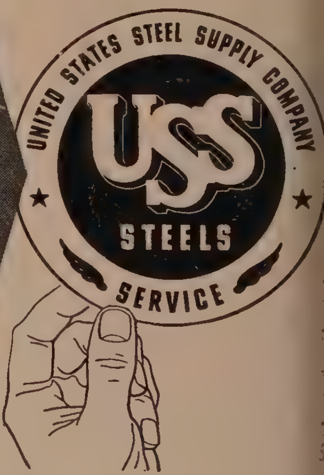
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UNITED STATES STEEL

rices Firm; Movement of Shipments Good

w York

• • **The market generally** looks ter than it has for quite some. ie. Shipments are moving in od volume and mills are buying the scrap they can get at cur- t price levels which are firm. The lid has blown off railroad cialties in Chicago as they hit all-time high. Rerolling rails nt at $70 to $73 and standard el car axles at $83 to $85. In tsburgh, however, some rail- d specialties went up $1 while ers dropped 50¢.

'ollowing the action taken by w York Central recently, 3 rail- ds in the Chicago area followed t and stopped selling heavy ting on an earmarked basis. ne others are expected to fol- suit. Some quarters, however, of the opinion that these com- ies might go back to the pro- ure of selling most of this terial on an earmarked basis in near future as they have for ny years in the past.

n Boston the market was gen- lly dull except for No. 1 heavy ting which moved up $1 and ught a top of $38.50. In the antime dealers in the Buffalo a are reported shipping as idly as possible to get their ds clear before winter. One ler expects to have his yard entory down to 200 tons by v Year's Day.

ast grades in most areas are tty and weak. The exception is Birmingham district where 1 cupola cast went up a solid ar to go at $71 to $73 while ed yard cast brought as much $70 a ton.

n New York the clean cast mical boring market passed of the picture. Shipments e been shut off until after the t of the year and any price ted would be nominal.

•

TTSBURGH—Shipments into the dis- were moving well during the past , with a little slowdown to be chalked the Thanksgiving Holiday. The dock e delayed movement of about 25,000 of German scrap into Pittsburgh mills arnegie-Illinois, which is still receiv- local scrap but has been diverting tonnages to Chicago to permit un- ng the German material. Reports of minor incidents involving this scrap have been exaggerated in some quarters. Two or three fuses or detonators are believed to have been touched off during the melting of some of the first material to arrive at Homestead Works. No one was hurt. No furnaces were damaged. To prevent a repetition, the European inspection will be supplemented by another in this country. Particular check will be made of parts that might contain small explosive charges. Railroad specialties were somewhat weaker in couplers and wheels, stronger in springs.

•

CHICAGO—Some railroad specialties hit an all-time high last week. Rerollers and car axles are now worth their weight in gold. A significant development last week was the decision of some of the major railroads to advertise and sell their railroad heavy melting to the highest bidder. For the past year much of this tonnage was earmarked to the mills at a formula price. In certain cases the roads sold all tonnages at this price, while in other cases the roads split their tonnage. The new setup apparently means that for the time being these railroads will not earmark their scrap but will sell all their heavy melting on a free market price. Some observers here claim that if all scrap was dumped on the open market and made available to anybody at any price, that this action would crack the high price experienced in the past year. The mills are still bragging about their inventory and there has been no significant price changes on steel mill items.

•

PHILADELPHIA—The heavy melting market is steady in this district. Mills that have been banking on foreign scrap shipments have been disappointed by the longshoremen's strike, but belief is general that this situation will be cleared up reasonably soon. One mill is out of the market again. The No. 1 market is unchanged at previous prices, although it is apparent that some brokers are paring the profit to 50¢. Prime grades of No. 1 are going into low phos grading and the one consumer in this district at the present time is growing more critical of the quality. Cast grades are firm but pipe foundries are getting fussy about taking steel out of cast grades. Chemical borings are weaker because of the absence of all factors from the market. The major buyer has held up shipments until after the first of the year. Shovelings are quoted 50¢ higher with the re-entry of a buyer into the market.

•

CLEVELAND—Anybody will take just about anything at the formula, which is another way of saying that no radical change in the scrap market here or in the Valley within the next week or so is anticipated by the trade. Neither steel nor gray iron foundries are too eager to buy, which is normal for this time of year. Steel foundries are comfortable, and the gray iron market is quiet, although a sudden demand for a big tonnage could readily upset the applecart. Mills are averaging about 6 weeks on the ground, and shipments, while hampered by the freight car shortage, have been fairly good. The expansion of the conversion business has required enough scrap to keep things boiling for the mills.

▪

DETROIT—The Detroit scrap market is static again this week as large mills continue to buy at going prices. Reports of over-the-market sales are still being heard and some sources insist that the volume of such sales is considerable. Cast iron grades continue spotty and with many jobbing foundries out of the market there are definite indications of weakness according to scrap sources here. Prices are unchanged again this week.

▪

CINCINNATI—On the basis of sentiment, the market here is not so hot. Prices are holding on both openhearth and foundry grades, and shipments have been holding up fairly well, but there is the growing suspicion, founded or unfounded, that the peak has been reached, and the boys are beginning to worry about having orders ahead. The shortage of cars has apparently bypassed the local Cincinnati area and when material is ready to move, there is transportation. Demand for foundry grades is showing a seasonal decline, but major consumers of openhearth grades are in the market continuously.

▪

NEW YORK—The market continues to look good this week. Shipments are moving in good volume and prices remain firm at current levels. The mills are still taking all the good scrap they can get to build up and maintain their winter stockpiles. In the chemical borings market, however, shipments have been held up completely. There just isn't any market now, there won't be until after the end of the year—and any price quoted is nominal.

•

BIRMINGHAM—For the third time in a month, prices for cast iron have advanced in this market. No. 1 cupola cast is up $1 to $73. Mixed cast is bringing as much as $70. Prices for steel grades are unchanged but the undertone is strong on some specialties. Mills continue to obtain consumption of openhearth material.

•

BOSTON—Except for No. 1 heavy melting steel which is selling for between $34.40 to $38.50, a slight improvement over previous quotations, the market here has turned dull and weak. Buyers say there just is no buying. However, with this weakening in activity, there is no drop in price. Some brokers don't want to quote prices because of the sudden inactivity.

•

BUFFALO—Buying for conversion purposes at premiums of 50¢ to $1.75 a ton continued to bar large scale orders in the local market. Some dealers said this type of demand was less aggressive but still adequate to absorb limited supplies. A brisk business was reported in blast furnace scrap at regular prices as three of the leading consumers entered the market at the same time and bought an estimated several thousand tons.

IRON AND STEEL SCRAP PRICES

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.50 to $43.00
RR. hvy. melting	43.50 to 44.00
No. 2 hvy. melting	42.50 to 43.00
RR. scrap rails	58.00 to 59.00
Rails 2 ft and under	62.00 to 62.50
No. 1 comp'd bundles	42.50 to 43.00
Hand bdld. new shts.	42.50 to 43.00
Hvy. axle turn.	45.50 to 46.50
Hvy. steel forge turn.	45.50 to 46.50
Mach. shop turn.	37.50 to 38.00
Shoveling turn.	39.00 to 40.00
Mixed bor. and turn.	37.50 to 38.00
Cast iron borings	39.50 to 40.00
No. 1 mach. cast	69.50 to 70.50
Mixed yard cast	64.00 to 65.00
Hvy. breakable cast.	61.00 to 62.00
Malleable	76.00 to 77.00
RR. knuck. and cup.	57.00 to 58.00
RR. coil springs	58.50 to 59.50
RR. leaf springs	58.50 to 59.50
Rolled steel wheels	57.00 to 58.00
Low phos.	49.00 to 50.00

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$41.50 to $42.00
No. 2 hvy. melting	41.50 to 42.00
No. 1 bundles	41.50 to 42.00
No. 2 dealers' bundles	41.50 to 42.00
Bundled mach. shop turn.	41.50 to 42.00
Galv. bundles	39.50 to 40.00
Mach. shop turn.	36.50 to 37.00
Short shov. turn.	38.50 to 39.00
Cast iron borings	37.50 to 38.00
Mix. borings and turn.	36.50 to 37.00
Low phos. hvy. forge	51.00 to 52.00
Low phos. plates	49.00 to 50.00
No. 1 RR. hvy. melt.	44.25 to 50.00
Rerolling rails	71.00 to 73.00
Miscellaneous rails	65.00 to 66.00
Angles & splice bars	58.00 to 59.00
Locomotive tires, cut	59.00 to 60.00
Cut bolster & side frames	52.00 to 55.00
Standard stl. car axles	83.00 to 85.00
No. 3 steel wheels	53.00 to 54.00
Couplers and knuckles	54.00 to 55.00
Rails, 2 ft and under	62.50 to 65.00
Malleable	83.00 to 84.00
No. 1 mach. cast.	72.00 to 73.00
No. 1 agricul. cast.	63.00 to 64.00
Heavy breakable cast.	62.00 to 64.00
RR. grate bars	60.00 to 64.00
Cast iron brake shoes	60.00 to 61.00
Cast iron car wheels	65.00 to 66.00

CINCINNATI

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$40.00 to $41.00
No. 2 hvy. melting	40.00 to 41.00
No. 1 bundles	40.00 to 41.00
No. 2 bundles	40.00 to 41.00
Mach. shop turn.	35.00 to 36.00
Shoveling turn.	37.00 to 38.00
Cast iron borings	36.00 to 37.00
Mixed bor. & turn.	35.00 to 36.00
Low phos., 18 in. under	48.00 to 49.00
No. 1 cupola cast.	65.00 to 66.00
Hvy breakable cast	59.00 to 60.00
Rails 18 in. and under	61.00 to 63.00
Rails random length	56.00 to 57.00
Drop broken	69.00 to 70.00

BOSTON

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$34.40 to $38.50
No. 2 hvy. melting	34.40
Nos. 1 and 2 bundles	34.40
Bushelings	34.40
Shoveling turn.	31.40
Machine shop turn.	29.40
Mixed bor. and turn.	29.40
Cl'n cast chem. bor.	37.50 to 38.50
No. 1 machinery cast.	64.00 to 65.00
No. 2 machinery cast.	59.00 to 60.00
Heavy breakable cast.	53.50 to 54.50
Stove plate	56.00 to 57.00

DETROIT

Per gross ton, brokers' buying prices f.o.b. cars:

No. 1 hvy. melting	$38.00
No. 2 hvy. melting	38.00
No. 1 bundles	38.00
New busheling	38.00
Flashings	38.00
Mach. shop turn.	$32.50 to 33.00
Machinery cast	63.00 to 65.00
Mixed yard cast	57.00 to 58.00
Shoveling turn.	34.50 to 35.00
Cast iron borings	33.50 to 34.00
Mixed bor. & turn.	34.50 to 35.00
Low phos. plate	42.50 to 43.00
Heavy breakable cast.	53.00 to 57.00
Stove plate	57.00 to 58.00
Automotive cast.	64.00 to 66.00

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages.

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	41.00 to 41.50
No. 1 bundles	44.00 to 45.00
No. 2 bundles	41.00 to 41.50
Mach. shop turn.	37.00 to 38.00
Shoveling turn.	39.00 to 39.50
Mixed bor. and turn.	36.75 to 37.25
Clean cast chemical bor.	42.00 to 43.00
No. 1 machinery cast.	66.00 to 67.00
No. 1 mixed yard cast.	61.00 to 62.00
Hvy. breakable cast	62.00 to 63.00
Clean auto cast.	65.00 to 66.00
Hvy. axle forge turn.	46.00 to 47.00
Low phos. plate, openhearth	49.00 to 50.00
Low phos., electric furnace	51.00 to 52.00
Low phos. bundles	48.00 to 49.00
RR. steel wheels	54.00 to 55.00
RR. coil springs	54.00 to 55.00
RR. malleable	80.00 to 82.00
Cast iron carwheels	68.00 to 70.00

ST. LOUIS

Per gross ton delivered to consumer:

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	40.00 to 41.00
Bundled sheets	40.00 to 41.00
Mach. shop turn.	35.00 to 36.00
Shoveling turnings	37.00 to 38.00
Locomotive tires, uncut	47.00 to 48.00
Mis. std. sec. rails	57.00 to 58.00
Steel angle bars	54.00 to 55.00
Rails 3 ft and under	60.00 to 62.00
RR. steel springs	49.00 to 50.00
Steel car axles	72.00 to 73.00
Brake shoes	59.00 to 60.00
Malleable	75.00 to 77.00
Cast iron car wheels	63.00 to 64.00
No. 1 machinery cast.	66.00 to 67.00
Hvy. breakable cast.	60.00 to 61.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	$40.00
No. 2 hvy. melting	40.00
No. 2 bundles	40.00
No. 1 bunsheling	40.00
Long turnings	$32.00 to 33.00
Shoveling turnings	35.00 to 36.00
Cast iron borings	29.50
Bar crops and plate	44.00 to 45.00
Structural and plate	44.00 to 45.00
No. 1 cupola cast.	71.00 to 73.00
Stove plate	65.00 to 67.00
No. 1 RR. hvy. melt.	41.00
Steel axles	51.00 to 52.00
Scrap rails	44.00 to 45.00
Rerolling rails	65.00 to 67.00
Angles & splice bars	53.00 to 54.00
Rails 3 ft & under	53.00 to 54.00
Cast iron carwheels	63.00 to 64.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.50 to $43.00
No. 2 hvy. melting	42.50 to 43.00
Mach. shop turn.	37.50 to 38.00
Short shov. turn.	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos.	47.50 to 48.00

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$38.50 to $39.00
No. 2 hvy. melting	37.00
No. 2 bundles	37.00
Mach. shop turn.	31.50 to 32.00
Mixed bor. & turn.	31.50 to 32.00
Shoveling turnings	33.50 to 34.00
Machinery cast.	59.00 to 60.00
Mixed yard cast	57.00 to 58.00
Heavy breakable cast.	56.00 to 57.00
Charging box cast.	56.00 to 57.00
Unstrp. motor blks.	53.50 to 54.50
Cl'n cast chem. bor.	38.00 to 39.00

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$47.00 to $49.0
No. 2 hvy. melting	41.75 to 42.2
No. 1 bundles	41.75 to 42.2
No. 2 bundles	41.75 to 42.2
No. 1 busheling	41.75 to 42.2
Mach. shop turn.	36.75 to 37.2
Shoveling turn.	38.75 to 39.2
Cast iron borings	37.75 to 38.2
Mixed bor. and turn.	36.75 to 37.2
Clean auto. cast.	69.00 to 70.0
Mixed cupola cast.	66.00 to 68.0
Stove plate	66.00 to 68.0
RR. malleable	70.00 to 75.0
Small indus. malleable	47.00 to 49.0
Low phos. plate	48.00 to 50.0
Scrap rails	58.0
Rails 3 ft & under	63.00 to 64.0
RR. steel wheels	56.00 to 58.0
RR. coil & leaf spgs.	56.00 to 58.0
RR. knuckles & coup.	56.00 to 58.0

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.00 to $42.5
No. 2 hvy. melting	42.00 to 42.5
No. 1 bundles	42.00 to 42.5
No. 1 busheling	42.00 to 42.5
Drop forge flashings	42.00 to 42.5
Mach. shop turn.	37.00 to 37.5
Shoveling turn.	38.50 to 39.5
Steel axle turn.	42.00 to 42.5
Cast iron borings	37.50 to 38.5
Mixed bor. & turn.	36.50 to 37.5
Low phos. 2 ft and under	47.00 to 47.5
No. 1 machinery cast.	73.00 to 75.0
Malleable	79.00 to 81.0
RR. cast.	76.00 to 78.0
Railroad grate bars	60.00 to 62.0
Stove plate	61.00 to 63.0
RR. hvy. melting	43.00 to 43.5
Rails 3 ft and under	63.50 to 64.5
Rails 18 in. and under	65.00 to 66.0

SAN FRANCISCO

Per gross ton, f.o.b. shipping point:

No. 1 hvy. melting	$27.5
No. 2 hvy. melting	27.5
No. 2 bales	27.5
No. 3 bales	24.5
Mach. shop turn.	18.0
Elec. fur. 1 ft under	$40.00 to 42.0
No. 1 cupola cast.	58.00 to 60.0
RR. hvy. melting	28.5
Rails	29.0

LOS ANGELES

Per gross ton, f.o.b. shipping point:

No. 1 hvy. melting	$27.
No. 2 hvy. melting	27.
No. 1 bales	27.
No. 2 bales	27.
No. 3 bales	24.
Mach. shop turn.	20.
Elec. fur. 1 ft under	$40.00 to 42.
No. 1 cupola cast.	58.00 to 68.
RR. hvy. melting	28.

SEATTLE

Per gross ton delivered to consumer:

No. 1 & No. 2 hvy. melt.	$27.50 to $30.
Elec. fur. 1 ft and under	40.00 to 42.
No. 1 cupola cast.	50.00 to 54.
RR. hvy. melting	30.00 to 33.

HAMILTON, ONT.

Per gross ton delivered to consumer:
Cast grades f.o.b. shipping point:

Heavy melting	$23.0
No. 1 bundles	23.0
No. 2 bundles	22.5
Mechanical bundles	21.0
Mixed steel scrap	19.0
Mixed borings and turnings	17.0
Rails, remelting	23.0
Rails, rerolling	26.0
Bushelings	17.5
Bushelings, new fact, prop'd	21.0
Bushelings, new fact, unprop'd	16.0
Short steel turnings	17.0
No. 1 cast	$48.00 to 50.0
No. 2 cast	44.00 to 45.0

*Ceiling Price

For the Purchase or Sale of

Iron and Steel Scrap . . .

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Pacific Gas & Electric Co., Bldg.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices . .

Price advances over previous week are printed i
Heavy Type; declines appear in *Italics.*

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

	Nov. 23, 1948	Nov. 16, 1948	Oct. 26, 1948	Nov. 25, 1947
Flat-Rolled Steel:				
(cents per pound)				
Hot-rolled sheets	3.26	3.26	3.26	2.80
Cold-rolled sheets	4.00	4.00	4.00	3.55
Galvanized sheets (10 ga)	4.40	4.40	4.40	3.95
Hot-rolled strip	3.265	3.265	3.265	2.80
Cold-rolled strip	4.063	4.063	4.063	3.55
Plates	3.42	3.42	3.42	2.95
Plates wrought iron	7.85	7.85	7.85	6.85
Stains C-R strip (No. 302)	33.25	33.25	33.25	30.50
Tin and Terneplate:				
(dollars per base box)				
Tinplate (1.50 lb) cokes	$6.80	$6.80	$6.80	$5.75
Tinplate, electro (0.50 lb)	6.00	6.00	6.00	5.05
Special coated mfg. ternes	5.90	5.90	5.90	4.90
Bars and Shapes:				
(cents per pound)				
Merchant bars	3.37	3.37	3.37	2.90
Cold-finished bars	3.995	3.995	3.995	3.55
Alloy bars	3.75	3.75	3.75	3.30
Structural shapes	3.25	3.25	3.25	2.80
Stainless bars (No. 302)	28.50	28.50	28.50	26.00
Wrought iron bars	9.50	9.50	9.50	7.15
Wire:				
(cents per pound)				
Bright wire	4.256	4.256	4.256	3.55
Rails:				
(dollars per 100 lb)				
Heavy rails	$3.20	$3.20	$3.20	$2.75
Light rails	3.55	3.55	3.55	3.10
Semifinished Steel:				
(dollars per net ton)				
Rerolling billets	$52.00	$52.00	$52.00	$45.00†
Slabs, rerolling	52.00	52.00	52.00	45.00†
Forging billets	61.00	61.00	61.00	55.00†
Alloy blooms, billets, slabs	63.00	63.00	63.00	66.00†
Wire rod and Skelp:				
(cents per pound)				
Wire rods	3.619	3.619	3.619	2.80
Skelp	3.25	3.25	3.25	2.60

† Gross ton

	Nov. 23, 1948	Nov. 16, 1948	Oct. 26, 1948	Nov. 25 1947
Pig Iron:				
(per gross ton)				
No. 2, foundry, Phila.	$51.56	$51.56	$51.56	$40.97
No. 2, Valley furnace	46.50	46.50	46.50	36.50
No. 2, Southern Cin'ti	49.47	49.47	49.47	40.24
No. 2, Birmingham	43.38	43.38	43.38	34.88
No. 2, foundry, Chicago†	46.00	46.00	46.00	36.00
Basic del'd Philadelphia	50.76	50.76	50.76	40.47
Basic, Valley furnace	46.00	46.00	46.00	36.00
Malleable, Chicago†	46.50	46.50	46.50	36.50
Malleable, Valley	46.50	46.50	46.50	36.50
Charcoal, Chicago	73.78	73.78	73.78	56.04
Ferromanganese‡	161.71	161.71	161.71	145.00

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† The switching charge for delivery to foundries in the Chicago district is $1 per ton.

‡ Average of U. S. prices quoted on Ferroalloy page.

	Nov. 23, 1948	Nov. 16, 1948	Oct. 26, 1948	Nov. 25 1947
Scrap				
(per gross ton)				
Heavy melt'g steel, P'gh.	$42.75	$42.75	$42.75	$40.00
Heavy melt'g steel, Phila.	44.50	44.50	45.00	43.00
Heavy melt'g steel, Ch'go	41.75	41.75	41.75	38.75
No. 1, hy. comp. sh't, Det.	38.00	38.00	38.00	34.75
Low phos. Young'n	47.75	47.75	47.75	47.25
No. 1, cast, Pittsburgh	70.00	70.00	70.00	52.00
No. 1, cast, Philadelphia	66.50	66.50	66.50	53.00
No. 1, cast, Chicago	72.50	72.50	71.00	52.50
Coke, Connellsville:				
(per net ton at oven)				
Furnace coke, prompt	$15.00	$15.00	$15.00	$12.50
Foundry coke, prompt	17.00	17.00	17.00	14.00
Nonferrous Metals:				
(cents per pound to large buyers)				
Copper, electro, Conn.	23.50	23.50	23.50	21.50
Copper, Lake Conn.	23.625	23.625	23.625	21.62
Tin, Grade A, New York	$1.03	$1.03	$1.03	80.00
Zinc, East St. Louis	17.50	17.50	15.50	10.50
Lead, St. Louis	21.30	21.30	19.30	14.80
Aluminum, virgin	17.00	17.00	17.00	15.00
Nickel, electrolytic	42.90	42.90	42.90	37.67
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	38.50	38.50	38.50	33.00

Composite Prices . .

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942, and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite price for the current quarter is an estimate based on finished steel shipments for the previous quarter. This figure will be revised when shipments for this quarter are compiled.

	FINISHED STEEL (Base Price)	PIG IRON	SCRAP STEEL
Nov. 23, 1948	3.75628¢ per lb.	$46.82 per gross ton	$43.00 per gross ton
One week ago	3.75628¢ per lb.	$46.82 per gross ton	$43.00 per gross ton
One month ago	3.75628¢ per lb.	$46.82 per gross ton	$43.16 per gross ton
One year ago	3.19541¢ per lb.	$37.06 per gross ton	$40.58 per gross ton

	HIGH	LOW	HIGH	LOW	HIGH	LOW
1948	3.75700¢ July 27	3.22566¢ Jan. 1	$46.82 Oct. 12	$39.58 Jan. 6	$43.16 July 27	$39.75 Mar.
1947	3.19541¢ Oct. 7	2.87118¢ Jan. 7	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May
1946	2.83599¢ Dec. 31	2.54490¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan.
1945	2.44104¢ Oct. 2	2.54490¢ Jan. 2	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May
1944	2.30837¢ Sept. 5	2.21189¢ Oct. 5	$23.61	$23.61	19.17 Jan. 11	15.76 Oct.
1943	2.29176¢	2.29176¢	23.61	23.61	$19.17	$19.17
1942	2.28249¢	2.28249¢	23.61	23.61	19.17	19.17
1941	2.43078¢	2.43078¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr.
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr.
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov 5	17.83 May 14	13.42 Dec. 10	10.33 Apr.
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept.
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan.
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec.
1930	2.25488¢ Jan. 7	1.97319¢ Dec. 9	18.21 Jan. 7	15.90 Dec. 16	15.00 Feb. 18	11.25 Dec.
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec.

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue.

Based on averages for basic iron at valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy meltin steel scrap quotations to consume at Pittsburgh, Philadelphia and Ch cago.

Iron and Steel Prices . . .

Steel prices shown here are f.o.b. producing points in cents per pound unless otherwise indicated. Extras apply. (1) Commercial quality sheet grade; prices, 0.25¢ above base. (2) Commercial quality grade. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Cokes, 1.25 lb, deduct 20¢ per base box. (6) 18 gage and heavier. (7) For straight length material only from producers to fabricators. (8) Also shafting. For quantities of 40,000 lb and over. (9) Carload lot in manufacturing trade. (10) Hollowware enameling, gages 29 to 31 only. (11) Produced to dimensional tolerances in AISI Manual Sec. 6. (12) Slab prices subject to negotiation in most cases. (13) San Francisco only. (14) Los Angeles only. (15) San Francisco and Los Angeles only. (16) Seattle only. (17) Seattle and Los Angeles only.

PRODUCTS	Base prices at producing points apply to the sizes and grades produced in these areas													
	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		Detroit	Johnstown	Seattle, S. Frisco, LosAngeles	Fontana
OTS arbon forging	$50.00														
lloy	$51.00						(per net ton)								
LETS, BLOOMS, SLABS arbon, rerolling[12]	$52.00				$52.00	$52.00	(per net ton)						$52.00		
arbon forging billets	$61.00	$61.00	$61.00	$61.00	$61.00	$61.00	(per net ton)						$61.00		
lloy	$63.00	$63.00				$63.00	(Bethlehem, Canton, Massillon = $63.00) (per net ton)								
E SKELP	3.25						3.25				Warren =3.25				
RE RODS	3.40 to 4.15	3.40 to 3.90		3.40	3.40		3.65	3.50			Worcester 3.70		3.40	4.05[13] 4.10[14]	
EETS ot-rolled[6]	3.25 to 3.30	3.25	3.25	3.25–3.30	3.25	3.25	3.25	3.25		Warren, Ashland =3.25		3.45		3.95[15]	5.65
old-rolled[1]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.70	4.00	Warren 4.00	4.20		Pittsburg, Cal. 4.95	
alvanized (10 gage)	4.40	4.40	4.40		4.40			4.40	Canton =4.40	4.40	Ashland =4.40			5.15[15]	
nameling (12 gage)	4.40	4.40	4.40	4.40			4.40		4.60	4.40		4.70			
ong ternes[2] (10 gage)	4.80		4.80							4.80					
IP ot-rolled[3]	3.25 to 3.30	3.25 to 3.30	3.25	3.25 to 3.30	3.25	3.25	3.25	3.25		3.25	Warren =3.25	3.45		4.00 to 4.25	5.90
old-rolled[4]	4.00	4.25		4.00	4.00	4.00	4.00	4.00		New Haven 4.50 Warren=4.00 to 4.25		4.20 to 4.50			7.10
PLATE okes, 1.50 lb.[5] base box	$6.80	$6.80	$6.80		$6.90			$6.90	$7.00	Warren, Ohio =$6.80				Pittsburg, Cal.=$7.55	
lectrolytic 25, 0.50, 0.75 lb. box	Deduct $1.00, 80¢ and 60¢ respectively from 1.50 lb. coke base box price														
RNES MFG., special coated	Deduct 90¢ from 1.50 lb. coke base box price														
CKPLATE CANMAKING -70 lb, 75-95 lb, 100-128 lb	Deduct $1.60, $1.70 and $1.60 respectively from 1.50 lb. coke base box price														
CKPLATE, h.e., 29 ga.[10]	4.75	4.75	4.75					4.85							
S arbon Steel	3.35 to 3.55	3.35	3.35	3.35	3.35	3.35	3.35	3.35		3.35	Canton =3.35	3.55	3.35	4.05 to 4.10	5.30
einforcing (billet)[7]	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35			Canton =3.35		3.35	4.05 to 4.10	5.30
old-finished[8]	3.95 to 4.00	4.00	4.00	4.00		4.00	4.00					4.30			
loy, hot-rolled	3.75	3.75	3.75			3.75	3.75	Bethlehem, Canton, Massillon=3.75				4.05	3.75	4.80[14]	5.50
loy cold-drawn	4.65 to 4.75	4.65	4.65	4.65		4.65	4.65	Massillon=4.65			Worcester 4.95				
TE arbon steel[11]	3.40 to 3.60	3.40	3.40	3.40 to 3.60	3.40 Conshohocken =3.95	3.45	3.40	3.45	Coatesville=3.75, Claymont=3.95 Geneva=3.40, Harrisburg=6.50			3.65	3.45	4.30[16]	5.80
oor plates	4.55	4.55		4.55				Conshohocken =4.55							
loy	4.40	4.40							Coatesville=5.10						
PES, Structural	3.25 to 3.30	3.25	3.25		3.25	3.30	Bethlehem=3.30, Geneva, Utah=3.25						3.30	3.85 to 4.30	5.75
NUFACTURERS' WIRE[9] ight	4.15 to 4.50	4.15 to 4.65		4.15	4.15		4.15	4.25	Duluth=4.15, Worcester=4.45				4.15	5.15[13]	
ring (high carbon)	5.20	5.20		5.20				5.30	Worcester=5.50 New Haven, Trenton=5.50				5.20	Duluth= 5.20-6.15	
NG, Steel sheet	4.05	4.05				4.05									

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	Chromium Nickel						Straight Chromium		
	301	302	303	304	316	347	410	416	430
Ingots, rerolling	12.75	13.50	15.00	14.50	22.75	20.00	11.25	13.75	11.50
Slabs, billets, rerolling	17.00	18.25	20.25	19.25	30.25	26.75	15.00	18.50	15.25
Forging discs, die blocks, rings	30.50	30.50	33.00	32.00	49.00	41.00	24.50	25.00	25.00
Billets, forging	24.25–26.50	24.25–26.50	26.25–28.75	25.50–27.75	39.00–42.75	32.75–35.75	19.50–21.50	20.00–21.75	20.00–21.75
Bars, wire, structurals	28.50	28.50	31.00	30.00	46.00	38.50	23.00	23.50	23.50
Plates	32.00	32.00	34.00	34.00	50.50	44.00	26.00	26.50	26.50
Sheets	37.50–40.75	37.50–40.75	39.50–43.00	39.50–43.00	53.00–57.25	50.00–54.00	33.00	33.50	35.50 .....
Strip, hot-rolled	24.25	25.75	30.00	27.75	46.00	38.75	21.25	28.00	21.75
Strip, cold-rolled	30.50–30.75	33.00–33.50	36.50–39.50	35.00–35.75	55.00–57.25	48.50–50.00	27.00	33.50	27.50 .....

ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diameter in in.	Length in in.	
Graphite		
17, 18, 20	60, 72	16.00¢
8 to 16	48, 60, 72	16.50¢
7	48, 60	17.75¢
6	48, 60	19.00¢
4, 5	40	19.50¢
3	40	20.50¢
2½	24, 30	21.00¢
2	24, 30	23.00¢
Carbon		
40	100, 110	7.50¢
35	65, 110	7.50¢
30	65, 84, 110	7.50¢
24	72 to 104	7.50¢
17 to 20	84, 90	7.50¢
14	60, 72	8.00¢
10, 12	60	8.25¢
8	60	8.50¢

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	90.5¢
18	4	1	—	5	$1.42
18	4	2	—	—	$1.025
1.5	4	1.5	8	—	65¢
6	4	2	6	—	69.5¢

High-carbon-chromium	52¢
Oil harden manganese	29¢
Special carbon	26.5¢
Extra carbon	22¢
Regular carbon	19¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

ELECTRICAL SHEETS

Base, HR cut lengths, f.o.b. mill

	Cents per lb
Armature	5.45
Electrical	5.95
Motor	6.70 to 9.20
Dynamo	7.50 to 10.00
Transformer 72	8.05 to 11.80
Transformer 65	8.60 to 12.35
Transformer 58	9.30 to 13.05
Transformer 52	10.10

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb	$3.20†
Joint bars, 100 lb	4.25
Light rails (from billets) per 100 lb	3.55

	Base Price cents per lb
Track spikes	5.35
Axles	5.20
Screw spikes	8.00
Tie plates	4.05
Tie plates, Pittsburg, Calif.*	4.20
Track bolts, untreated	8.25
Track bolts, heat treated, to railroads	8.50

*Seattle, add 30¢.

† CF&I $3.35; Inland $3.50.

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.00¢
0.41 to 0.60 carbon	5.50¢
0.61 to 0.80 carbon	6.10¢
0.81 to 1.05 carbon	8.05¢
1.06 to 1.35 carbon	10.35¢

Worcester, add 0.30¢.

CLAD STEEL

Base prices, cents per pound

	Plate	Sheet
Stainless clad		
No. 304, 20 pct, f.o.b.		
Coatesville, Pa.	*26.50	
Washington, Pa.	*26.50	*22.50
Claymont, Del.	*26.50	
Conshohocken, Pa.		*22.50
Nickel-clad		
10 pct f.o.b. Coatesville, Pa.	27.50	
Inconel-clad		
10 pct, f.o.b. Coatesville.	36.00	
Monel-clad		
10 pct, f.o.b. Coatesville.	29.00	
Alumnized steel sheets		
Hot dip, 20 gage, f.o.b. Butler, Pa.	....	9.25

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* Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. mill

	Base Column	*Pittsbu Calif*
Standard & coated nails*	103	12
Galvanized nails*	103	12
Woven wire fence†	109	13
Fence posts, carloads††	114	..
Single loop bale ties	106	13
Galvanized barbed wire**	123	14
Twisted barbless wire	123	..

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* Pgh., Chi., Duluth; Worcester, 6 umns higher. † 15½ gage and heav ** On 80 rod spools, in carloads. †† Dul only.

	Base per 100 lb	*Pittsb Cal*
Annealed fence wire‡	$4.80	$5.7
Annealed, galv. fencing‡	5.25	6.2
Cut nails, carloads‡‡	6.75	...

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‡ Add 30¢ at Worcester; 10¢ at Sp rows Pt.

‡‡ Less 20¢ to jobbers.

HIGH STRENGTH, LOW ALLOY STEELS

Mill base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dynalloy	HI Steel	Mayari R	Otiscoloy	Yoloy	NAX High Tensile
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	Great Lakes Steel
Plates	5.20	5.20	5.20	5.30	5.20	5.30	5.20	5.20	5.65
Sheets									
Hot-rolled	4.95	4.95	4.95	5.25	4.95	4.95	4.95	4.95	5.25
Cold-rolled	6.05	6.05	6.05	....	6.05	6.05	6.05	6.05	6.35
Galvanized	....	6.75	....	....	....	6.75	....	....	....
Strip									
Hot-rolled	4.95	4.95	4.95	....	4.95	4.95	4.95	4.95	5.25
Cold-rolled	....	....	6.05	....	....	6.05	6.05	....	6.35
Shapes	....	4.95	....	....	4.95	5.05	4.95	....	....
Beams	....	4.95	....	....	....	....	....	....	....
Bars									
Hot-rolled	5.10	5.10	5.10	....	5.10	5.10	5.10	....	5.40
Bar shapes	....	5.10	....	....	5.10	5.10	5.10	....	....

PIPE AND TUBING

Base discounts, f.o.b. mills,
Base price, $200.00 per net ton.

lard, threaded and coupled

buttweld	Black	Galv.
....	43 to 41	20 to 18
....	46 to 44	24 to 22
....	48½ to 46½	27 to 25
....	49 to 47	27½ to 25½
....	49½ to 47½	28 to 26
....	50 to 48	28½ to 26½
3-in....	50½ to 49½	29 to 27
lapweld		
....	39½	17½
3 in...	39½	21½
6 in. ..	46½ to 42	20½ to 24½
seamless		
....	38½ to 27	16½ to 5
3-in ..	41½ to 35	19½ to 10½
6-in. ..	43½ to 38½	21½ to 16½
ght Iron, buttweld		
....	+20½	+52½
....	+10½	+41½
¼-in. ..	+ 4½	+32½
....	— 1½	+29
....	— 2	+28½
ght Iron, lapweld		
....	+ 7½	+36½
3½-in..	+ 5	+32
....	list	+26
8-in. ..	+ 2	+27½

Strong, plain ends

buttweld		
....	42 to 40	20½ to 18½
....	46 to 44	24½ to 22½
....	48 to 46	27½ to 25½
....	48½ to 46½	28 to 26
....	49 to 47	28½ to 26½
....	49½ to 47½	29 to 27
3-in. ..	50 to 48	29½ to 27½
lapweld		
....	39½	18½
3-in. ..	44½	23½
6-in. ..	48 to 44	23 to 27
seamless		
....	37½ to 32½	16½ to 11½
3-in. ..	41½ to 36½	20½ to 15½
6-in. ..	45	24
ght Iron, buttweld		
....	+16	+46½
....	+ 9½	+39½
-in.	— 1½	+28½
ght Iron, lapweld		
....	+ 4½	+33
4-in. ..	— 5	+21½
6-in. ..	— 1	+26

threads only, buttweld, lapweld and ess pipe, one point higher discount r price) applies. For plain ends, eld, lapweld and seamless pipe 3-in. maller, three points higher discount r price) applies, while for lapweld seamless 3½-in. and larger four higher discount (lower price) ap- On buttweld and lapweld steel pipe, rs are granted a discount of 5 pct. .l. shipments, prices are determined ding 25 pct and 30 pct and the car- reight rate to the base card.

BOILER TUBES

mless steel and electric welded com- al boiler tubes and locomotive tubes, um wall. Prices per 100 *ft at mill in d lots, cut length* 4 *to* 24 *ft inclusive.*

Gage	Seamless		Electric Weld	
BWG	H.R.	C.R.	H.R.	C.D.
13	19.18	22.56	18.60	21.89
12	25.79	30.33	25.02	29.41
12	28.68	33.76	27.82	32.74
11	35.85	42.20	34.78	40.94
10	44.51	52.35	43.17	50.78

CAST IRON WATER PIPE

	Per net ton
4-in., del'd Chicago	$106.70
4-in., del'd N. Y.	103.50 to 108.40
4-in., Birmingham	93.50
and larger, f.o.b. cars, San ncisco, Los Angeles, for all shipment; rail and water ment less	120.30

s "A" and gas pipe, $5 extra; 4-in. s $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)

Base discount less case lots

Machine and Carriage Bolts

	Pct Off List
½ in. & smaller x 6 in. & shorter	35
9/16 & ⅝ in. x 6 in. & shorter	37
¾ in. & larger x 6 in. & shorter	34
All diam, longer than 6 in.	30
Lag, all diam over 6 in. longer	35
Lag, all diam x 6 in. & shorter	37
Plow bolts	47

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	35
9/16 to 1 in. inclusive	34
1⅛ to 1½ in. inclusive	32
1⅝ in. and larger	27

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts

	USS	SAE
7/16 in. and smaller	...	41
½ in. and smaller	38	..
½ in. through 1 in.	..	39
9/16 in. through 1 in.	37	..
1⅛ in. through 1½ in.	35	37
1⅝ in. and larger	28	..

In full case lots, 15 pct additional discount.

Stove Bolts

Packages, nuts separate	$61.75
In bulk	70.00

Large Rivets

	(½ in. and larger) *Base per* 100 *lb*
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$6.75
F.o.b. Lebanon, Pa.	6.75

Small Rivets

	(7/16 *in. and smaller)* *Pct off List*
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	48

Cap and Set Screws

(In packages)	*Pct Off List*
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright	46
¾ to 1 in. x 6 in., SAE (1035), heat treated	35
Set screws, oval points	
Milled studs	19
Flat head cap screws, listed sizes	5
Fillister head cap, listed sizes	28

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill.

Effective CaF, Content:	*Base price per net ton*
70% or more	$37.00
60% or less	34.00

LAKE SUPERIOR ORES

(51.50% *Fe, Natural Content, Delivered Lower Lake Ports)*

	Per Gross Ton
Old range, Bessemer	$6.60
Old range,nonbessemer	6.45
Mesabi, bessemer	6.35
Mesabi, nonbessemer	6.20
High phosphorus	6.20

Increases or decreases in freight rates, dock handling charges and taxes after Apr. 1, 1948, are to be added to above prices.

METAL POWDER

Per pound, f.o.b. shipping point, in ton lots, for minus 100 *mesh.*

Swedish sponge iron c.i.f. New York, ocean bags	7.9¢ to 9.0¢
Domestic sponge iron, 98+% Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe	19.5¢ to 39.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 microns, 98%, 99.8%+ Fe	90.0¢ to $1.75
Aluminum	30.00¢
Antimony	51.17¢
Brass, 10 ton lots	27.25 to 37.25¢
Copper, electrolytic	33.625¢
Copper, reduced	34.25¢
Cadmium	$2.55
Chromium, electrolytic, 99% min.	$3.50
Lead	27.80¢
Manganese	55.00¢
Molybdenum, 99%	$2.65
Nickel, unannealed	66.00¢
Nickel, spherical, minus 30 mesh, unannealed	68.00¢
Silicon	34.00¢
Solder powder	8.5¢ plus metal cost
Stainless steel, 302	75.0¢
Tin	$1.155
Tungsten, 99%	$2.90
Zinc, 10 ton lots	17.75 to 22.25¢

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$14.50 to $15.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$16.00 to $18.00
Foundry, Byproduct	
Buffalo	$22.75 to $23.10
Chicago, del'd	23.90
Chicago, f.o.b.	20.85
Detroit, f.o.b.	19.40
New England, del'd	22.75
Seaboard, N. J., f.o.b.	21.50
Philadelphia, f.o.b.	20.55
Swedeland, Pa., f.o.b.	20.50
Painesville, Ohio, f.o.b.	20.90
Erie, del'd	19.95
Cleveland, del'd	22.45
Cincinnati, del'd	21.40
St. Paul, del'd	23.17
St. Louis, del'd	20.98
Birmingham, del'd	18.66

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick	*Carloads, Per* 1000
First quality, Pa., Md., Ky., Mo. (except Salina, Pa., add $5)	$80.00
No. 1 Ohio	74.00
Sec. quality, Pa., Md., Ky., Mo.	74.00
No. 2 Ohio	66.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	11.50
Silica Brick	
Mt. Union, Pa., Ensley, Ala.	$80.00
Childs, Pa.	84.00
Hays, Pa.	85.00
Chicago District	89.00
Western, Utah and Calif.	95.00
Super Duty, Hays, Pa., Athens, Tex.	85.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	$13.75 to 14.00
Silica cement, net ton, bulk, Hays, Pa.	16.00
Silica cement, net ton, bulk, Ensley, Ala.	15.00
Silica cement, net ton, bulk, Chicago District	14.75
Silica cement, net ton, bulk, Utah and Calif.	21.00
Chrome Brick	*Per Net Ton*
Standard chemically bonded, Balt., Chester	$69.00
Magnesite Brick	
Standard, Balt. and Chester	$91.00
Chemically bonded, Balt. and Chester	80.00
Grain Magnesite	*Std. ⅜-in. grains*
Domestic, f.o.b. Balt. and Chester, in bulk, fines removed	$56.50
Domestic, f.o.b. Chewelah, Wash., in bulk with fines	$30.50 to 31.00
in sacks with fines	35.00 to 35.50
Dead Burned Dolomite	
F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk. Midwest, add 10¢; Missouri Valley, add 20¢	$12.25

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, per 100 lb.
(Metropolitan area delivery, add 15¢ to base, except New York, add 20

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140- Ann.
Philadelphia	$5.15- 5.71	$6.31- 6.57	$7.27- 7.47	$5.35- 5.66	$6.51	$5.37- 5.52	$5.09- 5.24	$5.35- 5.57	$6.16- 6.31	$9.14	$9.29	$10.54	$10.69
New York	5.40- 5.98	6.28- 6.43	7.25- 7.73	5.58- 5.88	6.48- 6.73	5.78	5.32- 5.58	5.53- 5.63	6.18- 6.38	9.17- 9.53	9.32- 9.68	10.40- 10.77	10.55 10.92
Boston	5.48- 5.64	6.39	7.56- 7.69	5.54- 5.89	6.75- 6.79	5.74	5.39- 5.54	5.48- 5.59	6.24- 6.34	9.40- 9.44	9.55- 9.59	10.84- 10.94	10.92 11.09
Baltimore	5.28	6.18	7.15- 7.38	5.34	....	5.53	5.33- 5.39	5.39	6.13	....	....	....	....
Chicago	4.85- 5.10	5.75- 5.95	6.95- 7.05	4.85- 5.30	6.15	5.10	4.90	4.90	5.70	9.35	9.60	10.80	11.05
Milwaukee	5.02- 5.07	5.92	7.12- 7.22	5.02- 5.37	6.32	5.22- 5.27	5.07	5.07	5.87	9.15- 9.17	9.32	10.52- 10.57	10.67 10.72
Norfolk	5.75	....	....	....	....	6.00	6.00	6.00	....	....	....	....	....
Cleveland	4.98- 5.20	5.75¹- 6.04¹	7.18- 7.24	5.02- 5.65	6.70	5.35- 5.54	5.16- 5.42	5.15- 5.34	5.70- 5.95	9.14- 9.66	9.29- 9.89	11.05	11.30
Buffalo	4.85- 5.10	5.75- 5.85	7.55- 7.70	5.55- 5.56	6.35	5.45- 5.46	5.10	5.15- 5.20	5.90- 6.05	9.05- 9.35	9.40- 9.60	10.75	20.90
Detroit	5.20- 5.55	6.05- 6.50	7.45	5.25- 5.70	6.25- 6.55	5.50- 5.55	5.30- 5.37	5.30- 5.52	6.02- 6.07	9.31- 9.55	9.20- 9.47	10.72- 10.95	10.87 11.10
Cincinnati	5.14- 5.36⁸	5.82- 6.21⁸	6.97- 7.45	5.25- 5.62⁸	6.31	5.50- 5.71⁸	5.30- 5.47⁸	5.30- 5.62⁸	6.06- 6.17⁸	9.31- 9.35	9.50- 9.51	10.75- 10.76	10.90 10.91
St. Louis	5.19	6.04- 6.09	7.29- 7.39	5.19- 5.79	6.49	5.39- 5.44	5.24	5.24	6.04	9.69	9.94	11.14	11.39
Pittsburgh	4.85- 4.90	5.75¹	6.95- 7.05	5.00- 5.35	5.95	5.05- 5.25	4.90- 5.15	4.90- 5.10	5.65- 5.80	9.35	9.60	10.40	10.55 10.80
St. Paul	5.41	6.31	7.30- 7.61	5.41	....	5.66	5.46	5.46	6.26	9.91	10.10	11.36	11.61
Omaha	5.92	....	9.18	5.92	....	6.17	5.97	5.97	6.77	....	....	....	....
Birmingham	5.05¹	6.36	6.45	5.05¹¹	6.36	5.25¹¹	5.00¹¹	5.00¹¹	6.66	....	....	....	....
Houston	6.40	....	8.80	6.75	....	6.35	6.20	6.40	7.60	9.80	9.65	10.75	10.95
Los Angeles	6.30- 6.40	7.85¹- 7.90	7.95- 8.55	6.60- 6.66	9.35⁵	5.95- 6.10	5.75- 5.90	6.05	7.85¹⁵- 7.95	10.90	10.85	12.40	12.65
San Francisco	5.95³	7.15²	8.25- 8.85	6.75³	8.25	6.30- 7.60	5.90- 6.90	5.90	7.55	10.90	10.85	12.40	12.65
Portland	6.50⁴	8.00²	8.15² 8.45²	6.85⁴	....	6.30⁴	6.25⁴	6.25⁴	8.25⁴	....	10.45¹⁵	....	12.05
Seattle	6.20⁴- 6.30⁴	7.75²- 7.85²	7.65 8.00	6.55⁴- 6.65⁴	....	6.20- 6.30	6.15- 6.25	6.05⁴- 6.15⁴	8.00¹⁴- 8.10¹⁴	....	10.30¹⁵- 10.40¹⁵	....	12.00 12.05
Salt Lake City	6.15- 8.00	7.35	7.90- 9.06	7.10- 7.45	....	5.75- 6.65	6.65- 7.00	6.95- 7.25	7.55- 8.40	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED: Sheets, 400 to 1999 lb; strip, extras on all quantities bars 1000 lb and over.

ALLOY BARS: 1000 to 1999 lb.

GALVANIZED SHEETS: 450 to 1499 lb.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000
and over; (7) 400 to 14,999 lb; (8) 400 lb
over; (9) 500 to 1999 lb; (10) 500 to 999
(11) 400 to 3999 lb; (12) 450 to 3749 lb; (
400 to 1999 lb; (14) 1500 lb and over; (
1000 to 4999 lb; (16) 4000 lb and over; (
up to 1999 lb.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums. Delivered prices do
include 3 pct tax on freight.

PRODUCING POINT PRICES

Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	.....	.....	.....	.....
Birmingham	42.88	43.38	.....	.....	.....
Buffalo	47.00- 48.00*	47.00- 48.00*	47.50- 48.50*	.....	.....
Chicago	46.00	46.00	46.50	47.00	.....
Cleveland	46.00	46.50	46.50	47.00	51.00
Duluth	46.00	46.00	46.50	47.00	.....
Erie	45.50	46.00	46.50	47.00	.....
Everett	.....	49.50	50.00	.....	.....
Granite City	47.90	48.40	48.90	.....	.....
Ironton, Utah	62.00	62.50	.....	.....	.....
Lone Star, Texas	.....	75.00†	.....	.....	.....
Neville Island	46.00	46.50	46.50	.....	.....
Provo	46.00	46.50	.....	.....	.....
Sharpsville	46.00	46.50	46.50	47.00	.....
Steelton	48.00	48.50	49.00	49.50	54.00
Struthers, Ohio	46.00	.....	.....	.....	.....
Swedeland	50.00	50.50	51.00	51.50	.....
Toledo	45.50	46.00	46.50	47.00	.....
Troy, N. Y.	.....	.....	.....	.....	54.00
Youngstown	46.00	46.50	46.50	.....	.....

DELIVERED PRICES† (BASE GRADES)

Consuming Point	Producing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	49.50	50.00	.....	...
Boston	Steelton	6.27	54.27	54.77	55.27	55.77	80.
Brooklyn	Bethlehem	3.90	51.90	.....	.....	.....	...
Cincinnati	Birmingham	6.09	48.97	49.47	.....	.....	...
Jersey City	Bethlehem	2.39	50.39	.....	.....	.....	...
Los Angeles	Provo	6.93	52.93	53.43	.....	.....	...
Mansfield	Cleveland-Toledo	3.03	49.03- 48.53	49.53- 49.03	49.53	50.03	54.
Philadelphia	Bethlehem	2.21	50.21	.....	.....	.....	...
Philadelphia	Swedeland	1.31	51.31	51.81	52.31	52.81	...
Philadelphia	Steelton	2.81	50.81	51.31	51.81	52.31	56.
San Francisco	Provo	6.93	52.93	53.43	.....	.....	...
Seattle	Provo	6.93	52.93	53.43	.....	.....	...
St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	...

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* Republic Steel Corp. price: Basis: pig iron at Buffalo set by average price of No. 1 hvy. mlt. steel scrap at Buffalo as sho in last week's issue of THE IRON AGE. Price is effective until next Sunday midnight.

† Low Phos, Southern Grade.

Producing point prices are subject to switching charges; silicon differential (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.00 to 6.50 pct. C/L per g.t., f.o.b. Jackson, Ohio —$59.50; f.o.b. Buffalo $60.75. Add $1.25 per ton for each additional 0.50 pct Si. up to 12 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for pct or more P. Bessemer ferrosilicon pr are $1.00 per ton above silvery iron price comparable analysis.

Charcoal pig iron base price for low p phorus $66.00 per gross ton, f.o.b. Ly Tenn. Delivered Chicago, $73.78. High p phorus charcoal pig iron is not being duced.

omanganese

-82% Mn, Maximum contract base , gross ton, lump size.

. Birmingham	$162
. Niagara Falls, Alloy, W. Va., Wel- d, Ont.	$160
. Johnstown, Pa.	$162
. Sheridan, Pa.	$160
. Rockwood, Tenn.	$165
. Etna, Pa.	$163

00 for each 1% above 82% Mn; lty, $2.00 for each 1% below 78%. iquets—Cents per pound of briquet, ered, 66% contained Mn.

ad, bulk	10.0
lots	11.6
ton lots	12.5

geleisen

ntract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
erton, Pa.	$61.00	$62.00
or Chicago	65.00	66.00

ganese Metal

ntract basis, 2 in. x down, cents per d of metal, delivered. % min. Mn, 0.2% max. C, 1% max. % max. Fe.

ad, packed	35.5
lots	37.0

rolytic Manganese

.b. Knoxville, Tenn., freight allowed of Mississippi, cents per pound.

ads	32
lots	34
ton lots	36

Carbon Ferromanganese

ntract price, cents per pound Mn cond, lump size, delivered.

	Carloads	Ton	Less
max. C. 0.06% 90% Mn.	25.25	27.10	28.30
max. C	24.75	26.60	27.80
max. C	24.25	26.10	27.30
max. C	23.75	25.60	26.80
max. C	23.25	25.10	26.30
max. C, 0% max. Ci	20.25	22.10	23.30

omanganese

ntract basis, lump size, cents per d of metal, delivered, 65-68% Mn, % Si, 1.5% max. C.

ad bulk	8.60
ots	10.25
et, contract basis, carlots, bulk ivered, per lb of briquet	10.0
lots	11.6
ton lots	12.5

y Iron (electric furnace)

14.01 to 14.50 pct., f.o.b. Keokuk, openhearth $84.00, foundry, $85.00; 5 f.o.b. Niagara Falls; Electric fur- silvery iron is not being produced at son. Add $1.00 per ton for each ad- nal 0.50% Si up to and including Add $1.00 for each 0.50 pct. Mn over

on Metal

ntract price, cents per pound con- d Si, lump size, delivered, for ton lots ed.

Si, 2% Fe	20.70
Si, 1% Fe	21.10

on Briquets

ntract price, cents per pound of et, bulk, delivered, 40% Si, 1 lb Si ets.

ad, bulk	5.90
lots	7.50
ton lots	8.40

ric Ferrosilicon

ntract price, cents per pound con- d Si, lump size, bulk, in carloads, ered.

Si	17.50
Si	10.50
Si	13.00
Si	14.65
% Si	16.50

um Metal

stern zone contract prices, cents per l of metal, delivered.

	Cast	Turnings	Distilled
ots	$2.05	$2.95	$3.75
ton lots	2.40	3.30	4.55

Ferrochrome (65-72% Cr, 2% max. Si)

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered.

0.06% C	28.75
0.10% C	28.25
0.15% C	28.00
0.20% C	27.75
0.50% C	27.50
1.00% C	27.25
2.00% C	27.00
65-69% Cr, 4-9% C	20.50
62-66% Cr, 4-6% C, 6-9% Si	21.35

Briquets — Contract price, cents per pound of briquet, delivered, 60% chromium.

Carload, bulk	13.75
Ton lots	15.25
Less ton lots	16.15

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carload	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carload	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, cents per lb. chromium contained packed, delivered, ton lots. 97% min. Cr. 1% max. Fe.

0.20% max. C.	1.09
0.50% max. C.	1.05
9.00% min. C.	1.04

Calcium—Silicon

Contract price per lb. of alloy, lump, delivered.

30-33% Ca, 60.65% Si, 3.00% max. Fe.

Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloys

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max, St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn. V-7: 28.32% Cr, 15-21% Si, 14-16% Mn.

Ton lots	15.75¢
Less ton lots	17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 56%, Ti 9%, Ca 5%.

Ton lots and carload packed	18.00¢
Less ton lots	19.50¢

SMZ

Contract price, cents per pound of alloy, delivered. 60-65% Si, 5-7 Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Other Ferroalloys

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered	$2.25
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained, V.	
Openhearth	$2.90
Crucible	3.00
High speed steel (Primos)	3.10
Vanadium pentoxide, 88-92% V_2O_5 contract basis, per pound Contained V_2O_5	$1.20
Ferrocolumbium, 50-60% contract basis, delivered, per pound contained Cb.	
Ton lots	$2.75
Less ton lots	2.80
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo.	95¢
Calcium molybdate, 45-50%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo.	80¢
Molybdenum oxide briquets, f.o.b. Langeloth and Washington, Pa., per pound contained Mo.	80¢
Molybdenum oxide in bags, f.o.b. Langeloth and Washington, Pa., per pound contained Mo.	80¢
Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti	$1.23
Ferrotitanium, 20-25%, 0.10% C max., ton lots, per pound contained Ti	$1.40
Less ton lots	1.45
High carbon ferrotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads, per net ton	$160.00
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton	$65.00
10 tons to less carload	75.00
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per pound of alloy.	
Carload, bulk	6.60¢
Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	8.40¢
Ton lots	9.30¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk	11.00
Ton lots, packed	11.25
Less ton lots	11.75

Borron Agents

Contract prices per pound of alloy, delivered.

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D.	
Ton lot	$1.20
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. X D, delivered.	
Ton lots	$1.67
Less ton lots	1.79
Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	$1.80
Silcaz, contract basis, delivered.	
Ton lots	45.00¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	93¢
No. 6	63¢
No. 79	45¢
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, f.o.b. Suspension Bridge, N. Y., freight allowed, Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%.	
Ton lots, per pound	8.625¢
Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	$6.25

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INCO Directors Visit in Canada

Ontario

• • • Seventeen directors of the International Nic Co. of Canada Ltd. from the United States, Cana and Great Britain recently made an inspection t covering the company's mines and plants in the ne by Sudbury district.

Photo of the directors was taken at Copper Cl Reading from left to right:

Front Row, H. R. MacMillan, C.B.E., of Vancouv president, H. R. MacMillan Export Company, Lt the Rt. Hon. Viscount Weir of Eastwood, P.C., G.C. of Glasgow, Scotland, chairman, G. & J. Weir, Lt Reg Halladay, of Cresskill, N. J., senior partner in t investment firm of Halladay & Co.; Robert C. Stanl of Dongan Hills, N. Y., chairman of the board a president of International Nickel; Dr. John Thompson, of New Canaan, Connecticut, executi vice-president of International Nickel; and James Duncan, of Toronto, president, Massey-Harris Co. L

Second Row, R. Leslie Beattie, of Copper Cliff, vi

president and general manager in charge of Ca dian operations of International Nickel; Ross H. M Master, of Montreal, chairman, The Steel Co. of Ca ada, Ltd.; John P. Bickell, of Toronto, chairma McIntyre-Porcupine Mines, Ltd.; Laurance S. Rock feller, of New York, president of Rockefeller Bro Inc.; Sir William T. Griffiths, of London, Englan vice-president of International Nickel in charge operations in Great Britain and European activitie and Dr. Donald Hamilton McLaughlin, of Berkel Calif., president, Homestake Mining Company.

Third Row, the Rt. Hon. Viscount Margesson Rugby, P. C., of London, England; H. C. F. Mo ridge, of Toronto, member of the firm of Osl Hoskin & Harcourt, Canadian counsel of Intern tional Nickel; William J. Hutchinson, of Peapa N. J., Treasurer of International Nickel; Henry Wingate, of New York, Secretary of Internation Nickel; and Grant B. Shipley, of Pittsburgh, cha man, Elliott Co.

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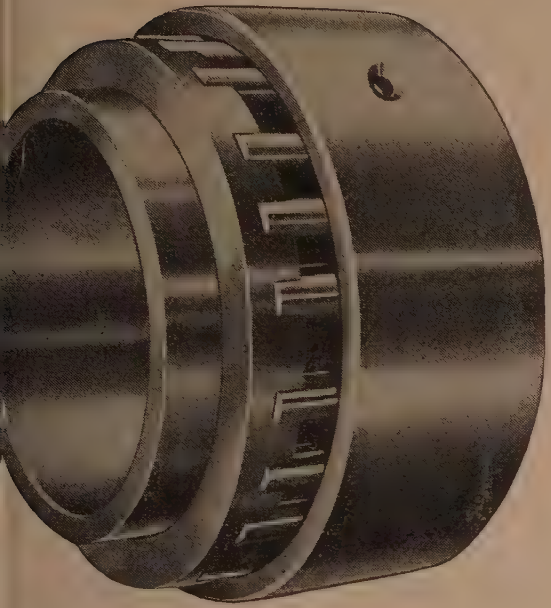

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Lecturer Covers New Motor Horizons

Chicago

• • • **Over 500 commercial** vehicle fleet represen
tives recently heard discussions on gears which w
last up to 20 times longer than conventional on
high compression engines to increase fuel econo
by 30 pct and aluminum coated mufflers at the vict
award luncheon conducted by the National Saf
Council.

The spokesman for the affair was W. J. Davids
Detroit, executive engineer for General Motors. G
eral Motors also was sponsor for the luncheon.

Mr. Davidson's subject was "New Motor Horizon
He talked about research and enginering proje
now under way which are aimed at greater efficien
and economy in the motor vehicles of tomorrow.

While considerable progress has been made
these new developments, Mr. Davidson emphasiz
that unforeseen research problems could delay p
fection of any one of them for some time to come.

Also just over the horizon for greater motori
comfort and efficiency, Mr. Davidson mentioned: n
ways of making parts from gray iron castings w
walls so thin that the weight of the parts will co
pare favorably with pressed steel or aluminum, a
yet have the rugged strength and life of cast ir
new types of alloy steel, through research wh
saves critically short alloy materials and yet
velops stronger metals; and a new method of sec
ing brake lining to the brake shoe which requires
rivets and permits almost the entire lining to
used up without scoring the brake drum.

Feels Freight Rates Are Still Low

Boston

• • • **Present day** freight and passenger rates
still relatively low despite recent increases, accord
to Robert M. Edgar, assistant to the president of
Boston and Maine R. R. Co.

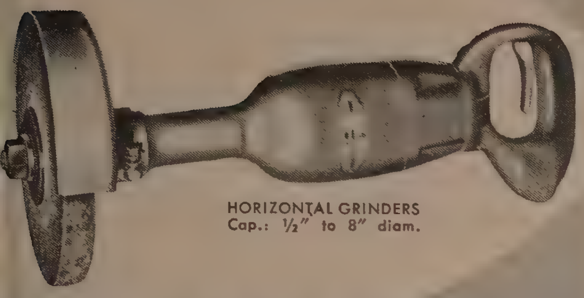
"That the price of railroad transportation has
mained relatively low in this country is someth
which I think has been overlooked by most peop
Mr. Edgar said. Because of the fact that railr
freight rates and passenger fares are subject to re
lation by public authority and because of the l
drawn out hearings and the publicity that attend
petition for increased rates, an impression is crea
that these rates have gone up more often and fas
than they actually have. The average revenue per
mile for the nation as a whole was 1.076¢ in 1947,
1.275¢ in 1921.

"The energies which once were devoted to build
and expansion today must be devoted to the meetin
competition from the automobile, the bus, and
truck, operated over magnificent publicly-owned hi
way systems, and the increasingly serious battle w
rising costs."

In speaking of the improved facilities of the r
roads that represent an investment giving the r
road business one of the highest investments
employee of any industry, he declared, "The fact t
a ton of freight is actually moved by rail in this co
try today, despite a recent increase, for only a li
more than 1¢ per mile, illustrates very plainly
effect of the investment that has been made in r
roads. This investment provides each worker w

SPOTLIGHTING

production savings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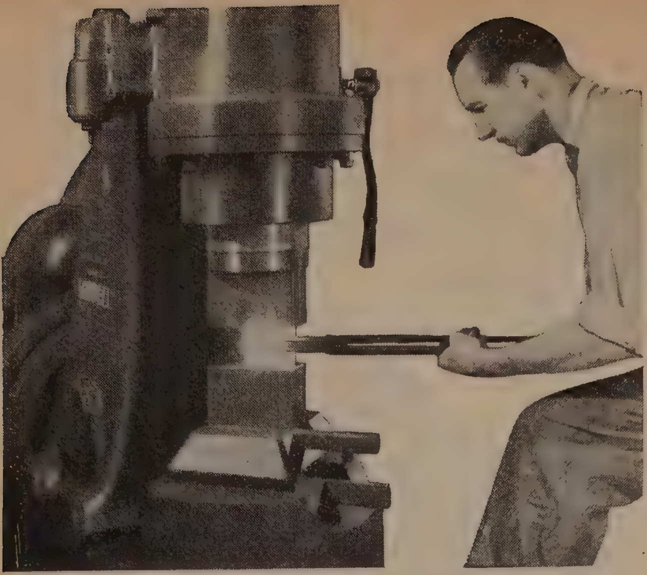

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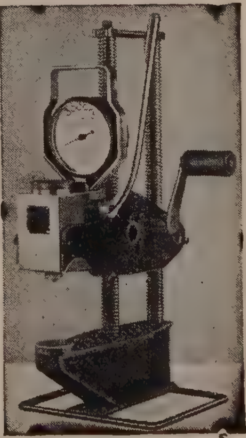

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$20,265 worth of tools, such as cars, engines, a trucks which greatly multiply transportation outpu

In speaking of the necessity for an adequate r of return on investment in railroads, he said, "Desp the recording-breaking volumes of traffic and gr revenues, the net return on the investment contin dangerously low. In 1947, it was less than 3½ pct. (of this must come money for improvements, reser for the future, and a return on their investment the stockholders who are the owners of the proper What this means is that the credit of the industry poor and when this situation exists it is impossible sell stock to finance improvements. To have to t money out of earnings to make improvements t should be financed by investment from outside unsound."

Canada's Nonferrous Exports Increase

Ottawa

• • • **Canadian exports** of nonferrous metals and pr ucts in August increased in value to $34,257,000 fr $25,589,000 in August, 1947, according to the De of Trade and Commerce. For the first 8 months t year exports had total value of $255,325,000 compa with $197,471,000 for the corresponding period l year.

Exports of nonferrous metals for the first 8 mon of 1948 and 1947 were as follows:

Exports of Nonferrous Metals

EIGHT MONTHS	1948	1947
Aluminum & products	$ 70,198.000	$ 41,926,000
Brass & products	3,169,000	2,200,000
Copper & products	49,917,000	35,129,000
Lead and products	19,526,000	19,124,000
Nickel	48,961,000	40,830,000
Precious metals	17,397,000	16,738,000
Zinc & products	24,191,000	20,136,000
Electrical apparatus	11,447,000	13,141,000
Other non-ferrous prods. ..	10,518,000	8,249,000
Total 8 Months	$255.325,000	$191,471,000

Blast-Furnace Slag Hits New High

Washington

• • • **In** 1947 iron blast-furnace slag processed commercial uses reached a new high of 19,581, short tons valued at $19,525,482, a figure 17 pct ab the 16,706,792 tons valued at $14,869,839 in 19 These statistics are based on a canvass conducted the National Slag Assn., of the 38 companies operat 58 plants that prepare iron blast-furnace slag for c mercial use. The results of this canvass were sembled in cooperation with the Bureau of Mi U. S. Dept. of the Interior.

Screened air-cooled slag, the major product, reac a total of 16,712,177 short tons, an increase of 17 over the 1946 figure. Of this total, 15,426,367 tons 92 pct, was used as railroad ballast, as aggregate portland cement concrete, bituminous constructio all types, miscellaneous highway construction uses, in the manufacture of concrete block.

The balance of the screened air-cooled slag was sumed in the manufacture of mineral wool, roo granules, sewage filters, agricultural and other use

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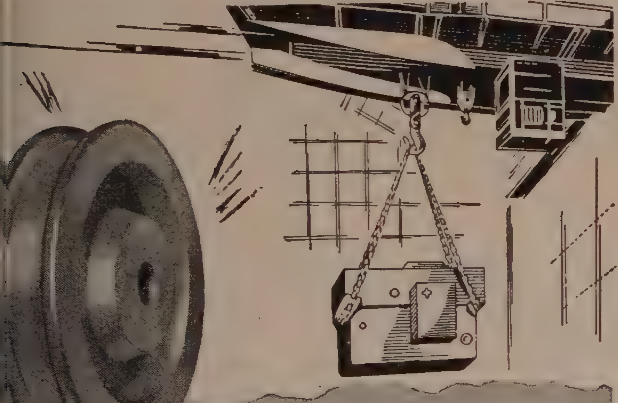

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Domestic Lead Consumption Falls

New York

• • • **Domestic lead** consumption fell from 84,62
tons in June to 70,501 tons in July, a decline of 1
pct, according to the Bureau of Mines, U. S. Dep
of the Interior. The average daily consumption wa
2274 tons compared with an average daily rate o
2926 tons in the first 6 months of 1948 and 2821 ton
in June.

Of the total lead consumed, 77 pct was used i
the manufacture of metal products, 10 pct in pigments, 10 pct in chemicals including tetraethyl flui
and 2 pct in miscellaneous and unclassified use
Lead consumed in the production of leaded zin
oxide, most of which was contained in lead or
treated directly without first being reduced to meta
totaled 1549 tons.

Refined soft lead, including some secondary a
well as primary lead, accounted for 60 pct of th
remaining 68,952 tons consumed, antimonial lea
for 24 pct and scrap and lead in alloys 16 pct.

Domestic consumption of all grades of lead totale
532,297 tons in the January-June period of 1948 wit
March showing the highest consumpion of 97,37
tons and May the lowest in this period with 80,97
tons used.

Consumers' stocks of lead increased 16 pct durin
the month. Stocks of refined lead were 27 pct highe
on July 31, 9 pct higher in antimonial lead and 2
pct higher in lead content of scrap.

Imports of lead in July increased 57 pct over th
June figure and were the highest yet recorded i
1948. Of the 30,851 tons imported, 78 pct was i
the form of pigs and bars most of which came fro
Mexico, Canada, and Australia in the order name
Ore and concentrates accounted for 18 pct of tota
imports, originating mostly in the Union of Sout
Africa, Bolivia, and Peru, and reclaimed scrap th
remaining 4 pct. No base bullion was imported i
July.

Canadian Pig Iron Output Decreases

Toronto

• • • **Canadian pig iron** production dipped slightl
in September to 182,465 net tons for a daily averag
of 80.9 pct of total capacity, compared with 191,38
tons in August when the daily rate was 82.1 pct, an
with 169,630 tons or 72.7 pct for September, 1947. Fo
the month under review production included 145,28
tons of basic iron of which 139,068 tons were fo
further use of producers and 6213 tons for sal
20,635 tons of foundry iron with 4112 tons for further use and 16,523 tons for sale and 16,549 tons
malleable iron, all for sale.

Charges to blast furnaces in September includ
322,520 tons of iron ore; 44,533 tons of mill cinde
scale, sinter, etc., and 6908 tons of scrap. Twelve
the 14 furnaces in Canada maintained productio
throughout the month.

For the first 9 months this year production of p
iron totaled 1,593,481 net tons, which compares wi
1,466,814 tons for the corresponding period of 19
and 1,032,067 tons in 1946.

Production of ferro-alloys in September amount
to 12,318 net tons, against 12,700 tons in the previo

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month and 11,152 tons in September last year. For the month under review production by tonnage included, ferrosilicon, silicomanganese, ferromanganese, ferrochrome, chrom-x and ferrophosphorus.

In the 9 months ending with September cumulative production of ferroalloys totaled 127,610 tons compared with 112,702 tons in the 1947 period and with 87,411 tons in 1946.

Following are comparative monthly production figures for pig iron and ferroalloys for 1947 and 1948 in net tons:

1947	Pig Iron	Ferroalloys
January	177,313	9,644
February	150,632	9,357
March	164,403	14,197
April	160,749	13,015
May	160,230	15,325
June	159,826	16,212
July	157,153	12,402
August	166,878	11,398
September	169,630	11,152
October	163,335	14,691
November	174,147	11,551
December	165,551	10,888
Total	1,969,847	149,832

1948	Pig Iron	Ferroalloys
January	160,042	17,125
February	151,123	11,823
March	172,675	14,293
April	170,785	14,474
May	193,305	18,436
June	183,763	13,502
July	187,940	12,939
August	191,383	12,700
September	182,465	12,318
Total 9 Months	1,593,481	127,610

Compares Solution Vapor Pressures

Washington

• • • **A differential manometer** that will direct pressure differences as small as 1-millionth of an atmosphere over a range of total pressure from 1 mm of mercury to 1 atmosphere has been developed by Harry Matheson and Murray Eden of the National Bureau of Standards.

This instrument, which operates on the principle of the aneroid barometer can be used to compare pressures of gases, organic vapors, and noncorrosive liquids. It is particularly useful in vapor-pressure work since less than a drop of liquid is sufficient to compare an unknown vapor pressure as a function of temperature with that of a known liquid.

The rest point of the new manometer is insensitive to temperature, and accidental pressure differences as high as an atmosphere introduce only temporary hysteresis effects. The instrument is also readily portable and need not be leveled before operation.

A number of devices for measurement of absolute vacuum or pressure differences have been available to the laboratory worker. However, the majority of such gages do not operate satisfactorily in the presence of vapors.

Other common disadvantages are large dead volume, inconvenience of handling or moving, difficulty or slowness of manipulation, lack of precision, and sensitivity to temperature.

In connection with a study at the National Bureau

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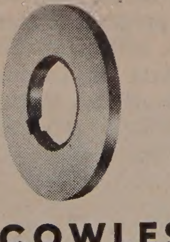

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of Standards of high-polymer plastics in solution, became necessary to compare solution vapor pres sures accurately.

Lack of suitable apparatus for this purpose r sulted in the design of the new type of differentia manometer, which is expected to prove useful i other fields of research. It may also be advanta geously substituted for slope gages and other com mercial devices for the measurement of small differ ences of pressure.

Castings Shipments Increase 16 Pct

New York

• • • **Shipments of** steel castings during Augus totaled 140,000 short tons, an increase of 16 pct ove the 120,000 tons shipped in July, according to th Bureau of the Census, Dept. of Commerce. Th August 1948 shipments were 16 pct higher than th 120,000 tons shipped in August 1947, although the were 8 pct lower than the June 1948 shipments o 153,000 tons. Shipments for the first 8 months o 1948, of 1,154,000 tons, were 9 pct higher than th 1,061,000 tons shipped in the same period of 1947

Steel castings shipped to the trade, representin 77 pct of all steel castings shipped during the month were 108,000 tons in August, 22 pct higher than th July shipments of 88,000 tons. Shipments of stee castings produced for the manufacturers' own us totaled 33,000 tons in August, slightly higher tha the 32,000 tons shipped in July.

Unfilled orders for steel castings for sale to th trade at the end of August amounted to 472,000 tons a drop of 5 pct from the orders on the books at th close of July. The August orders represented a back log of between 4 and 5 months' shipments at th current rate of activity.

Enters Into Manufacturing Agreement

Peoria, Ill.

• • • **Preco, Inc.,** of Los Angeles, has entered into a agreement with Caterpillar Tractor Co. of Peoria, Ill whereby it will manufacture No. 1 and No. 2 terracer for sale through Caterpillar distribution channels.

Preco, formerly known as Pacific Railway Equi ment Co., is chiefly interested in the manufacture o products for direct sale to railroads but will handle th sale of terracers separately from its railroad equi ment.

The No. 1 terracer is expected to be available in lat fall and the No. 2 by the first part of 1949.

American Standards Assn. Meets

New York

• • • **The practical** question "What Good are Stand ards?" was the theme of the annual meeting of th American Standards Assn. held recently at the Wal dorf-Astoria Hotel, New York. The 3 day meeting ha its climax at a luncheon following the final busines meeting of the technical groups working on standard through the procedure of the association.